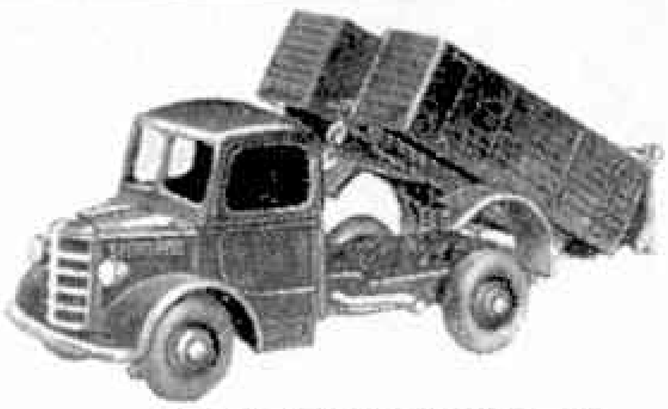
VOL. XXXIII No. 3 MARCH 1948

MECCANO MAGAZINE

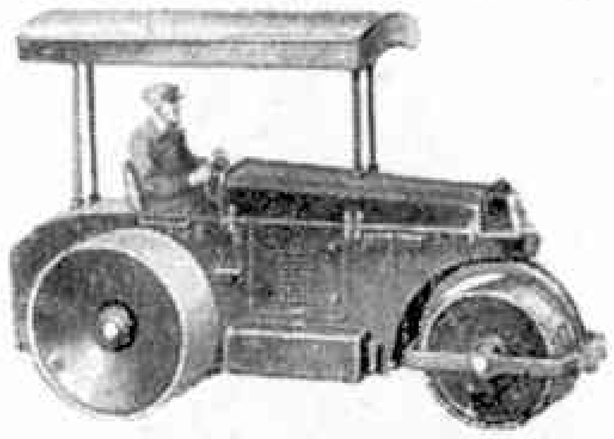
THE TRAVELLING POST OFFICE

6d.

DINKY TOYS



Bedford End Tipper
No. 25m
Price **5/9** each (including tax)



Aveling-Barford Diesel Roller
No. 25p
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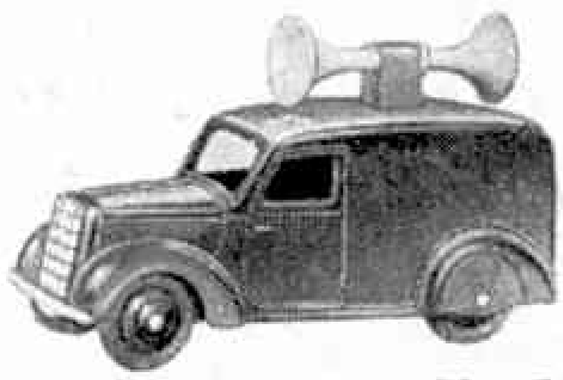

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Armstrong-Siddeley Coupé
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Riley Saloon
No. 40a
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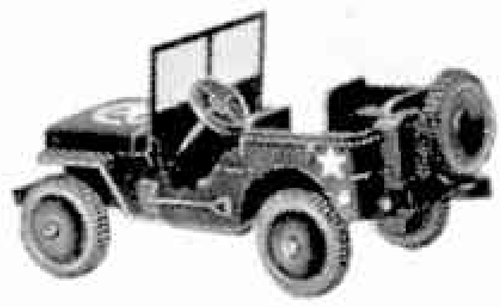
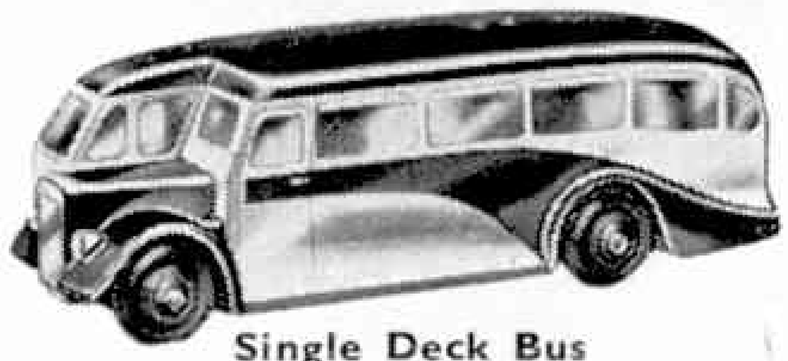
Lagonda Sports Coupé
No. 38c
Price **3/-** each (including tax)



Jeep, No. 153a
Price **2/9** each (including tax)



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No. 29e
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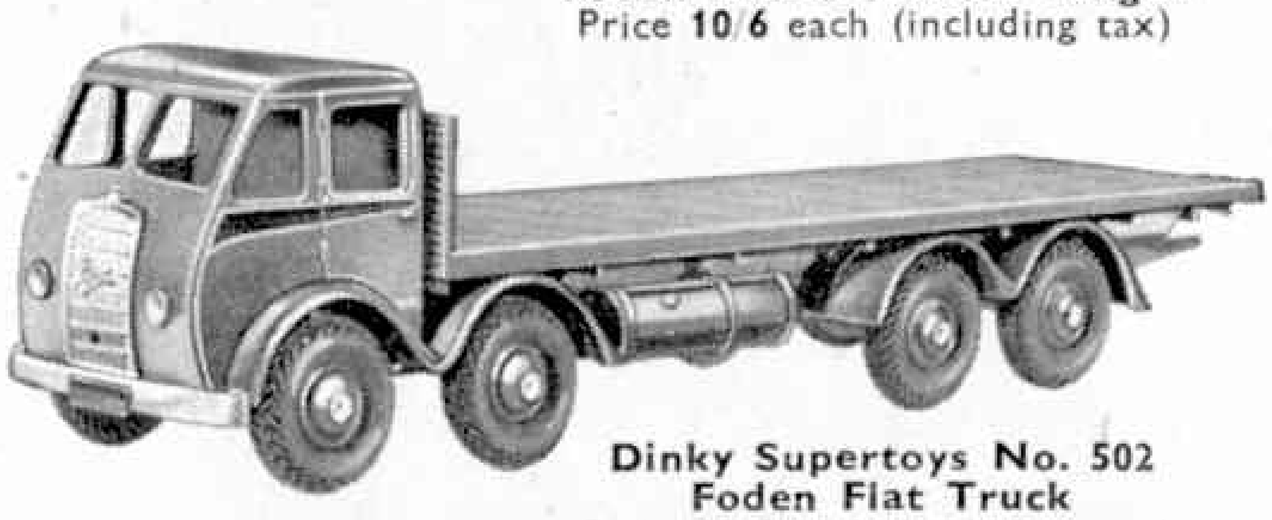
DINKY SUPERTOYS

These wonderful models are similar in style to the famous Dinky Toys, but much larger. The Foden Wagon, for instance, is 7½ in. long, and the Guy Lorry 5¼ in. long. The great amount of accurate detail included gives the models a strikingly realistic appearance.

Dinky Supertoys No. 501
Foden Diesel 8-wheel Wagon
Price **10/6** each (including tax)



Dinky Supertoys No. 502
Foden Flat Truck
Price **10/6** each (including tax)

Dinky Supertoys No. 511
Guy 4-ton Lorry
Price **7/6** each (including tax)

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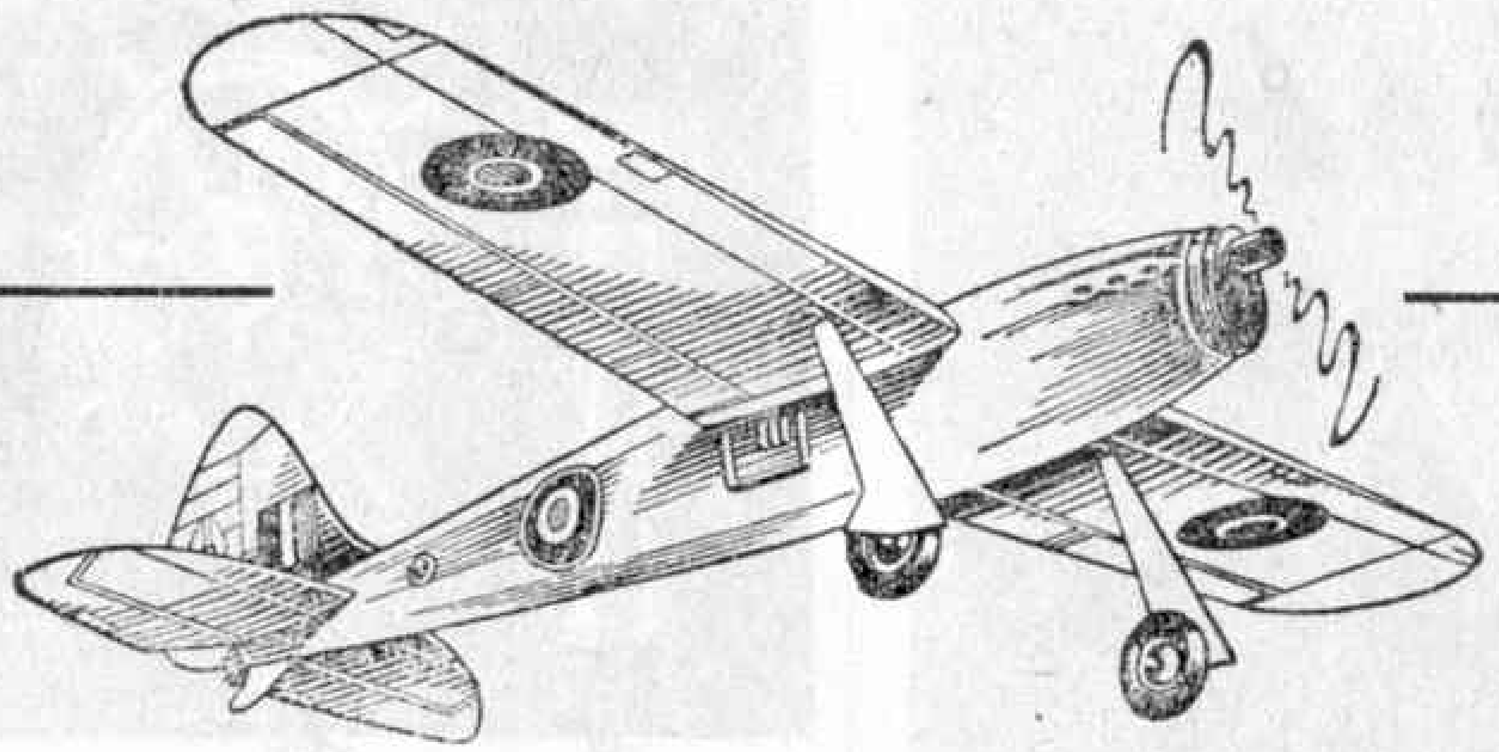

The New Mk V FIGHTER

This terrific model is based on the latest R.A.F. fighters and flies just like them—it takes off from the ground, climbs, loops, does stall turns and many other aerobatics. The Mk. V is supplied ready to fly, with a FROG patent winder box (shown below), all accessories and full flying instructions.

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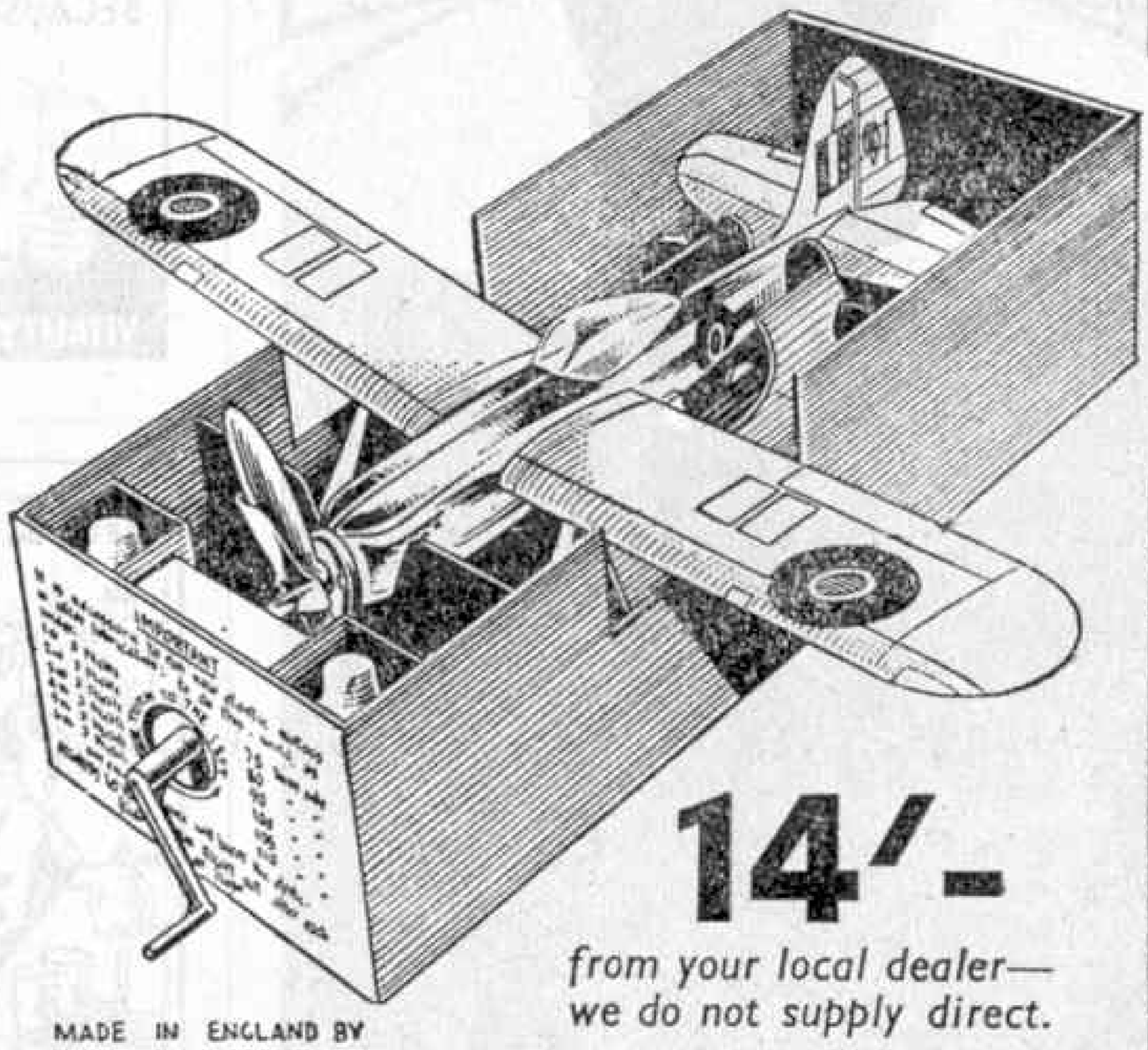

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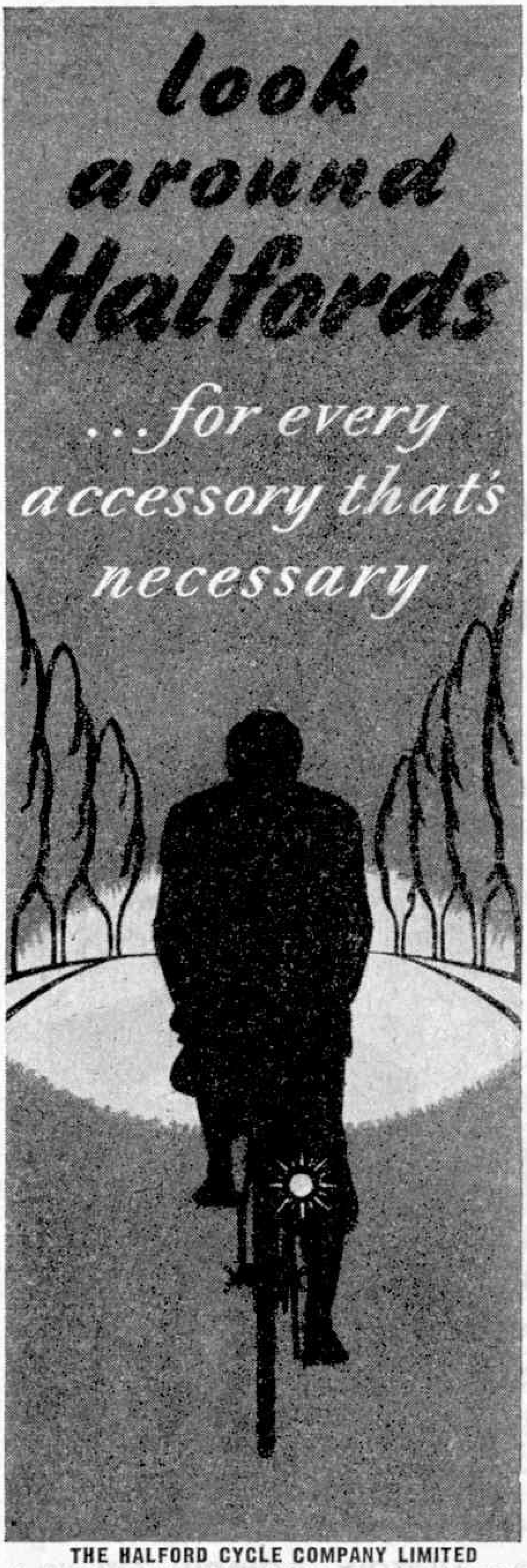

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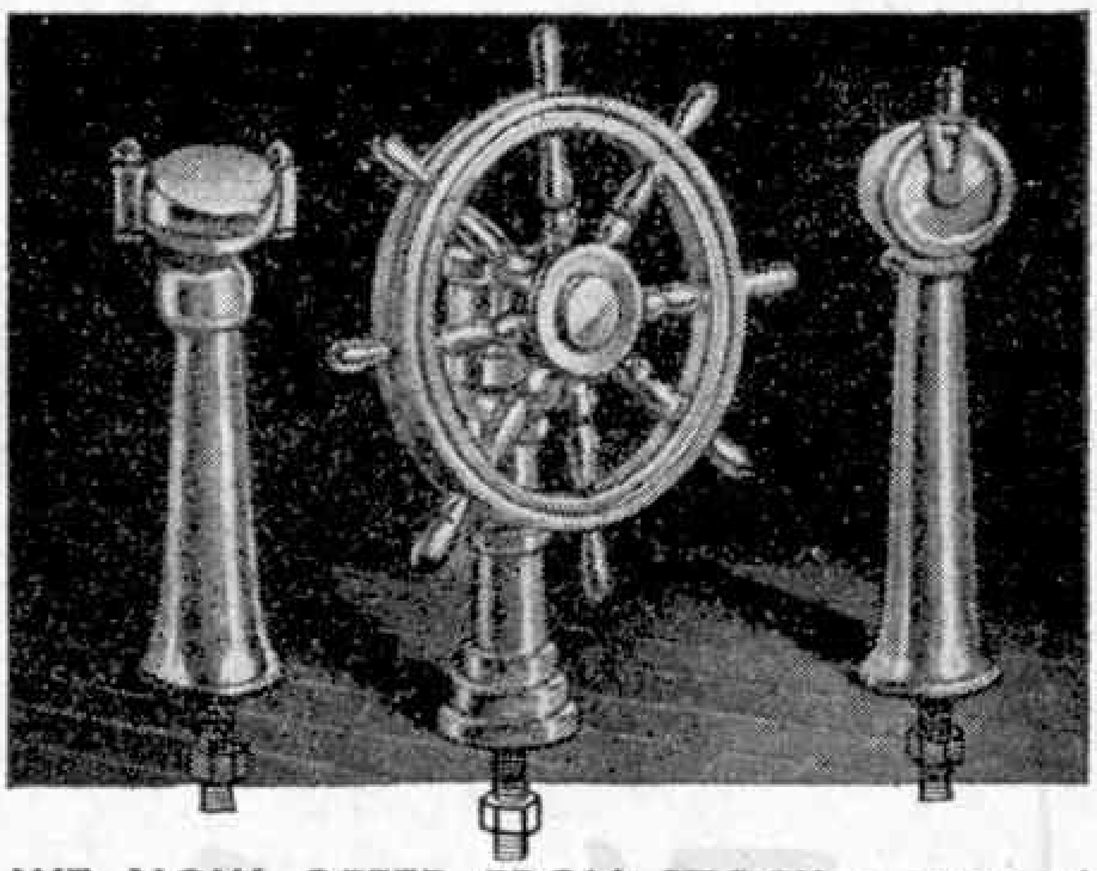

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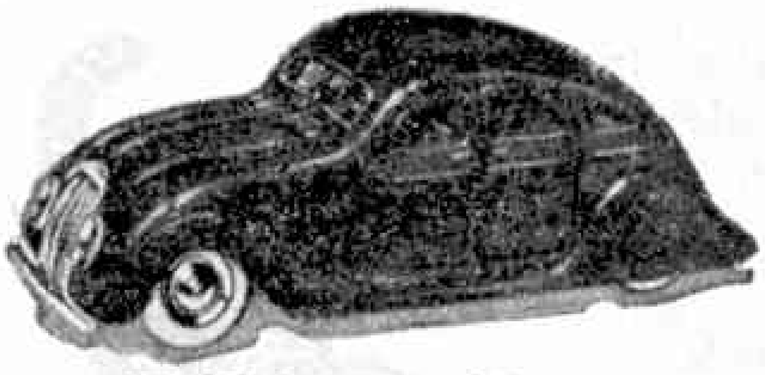
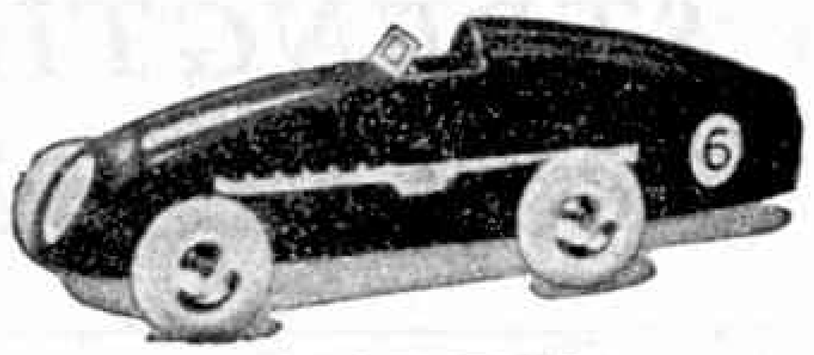


MINIC Streamline Saloon



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• POWERFUL MOTORS

Long-running motors suitably geared to individual models are fitted to all Minic Toys, enabling them to run well on most surfaces

• BRIGHT AND COLOURFUL

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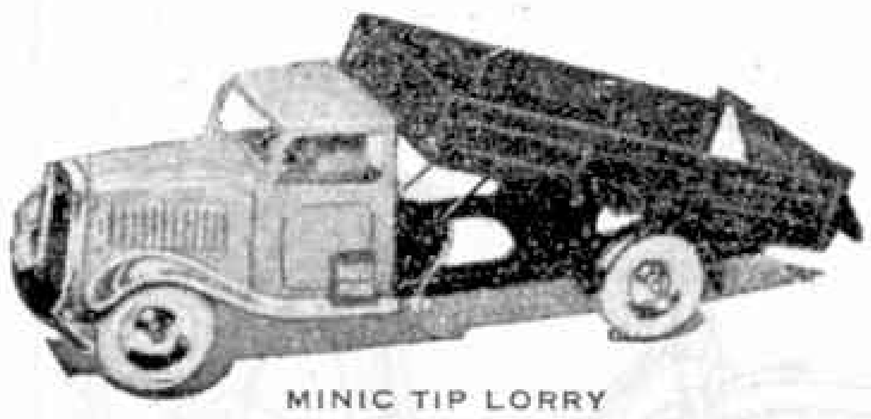
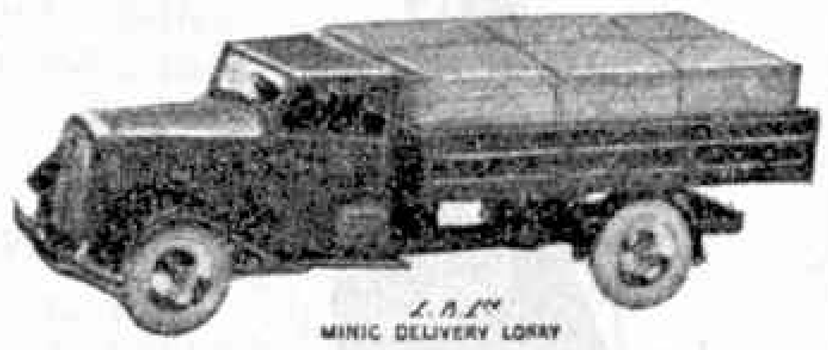


MINIC TIP LORRY



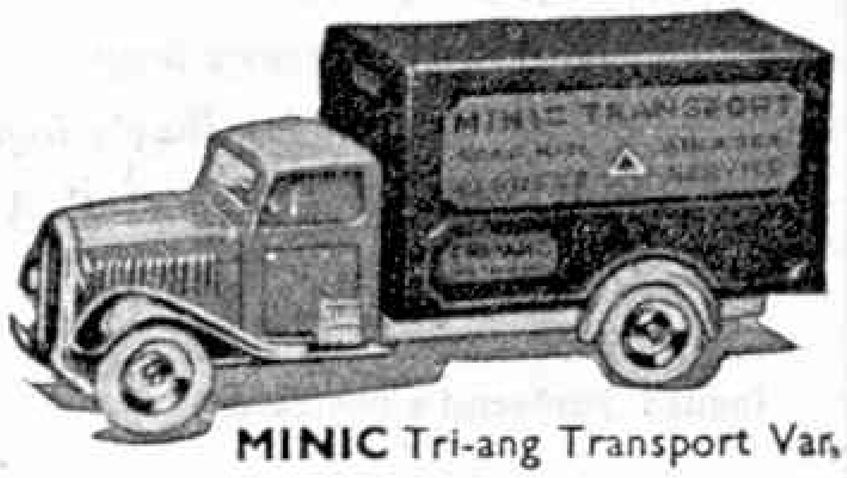
MINIC DELIVERY LORRY

• CONSTRUCTION

Minic Clockwork Toys are made with best quality materials by expert toy-makers and will give every satisfaction.

• AVAILABILITY

The majority of our production is for the Export Market, but we are endeavouring to distribute a limited quantity as fairly as possible amongst our dealers in Great Britain. Ask your local toy shop about them.



MINIC Tri-ang Transport Van

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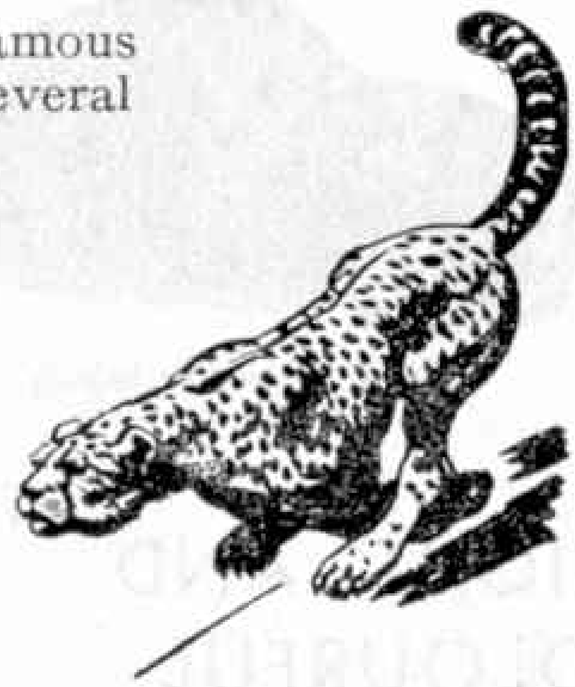
BSA *facts on*

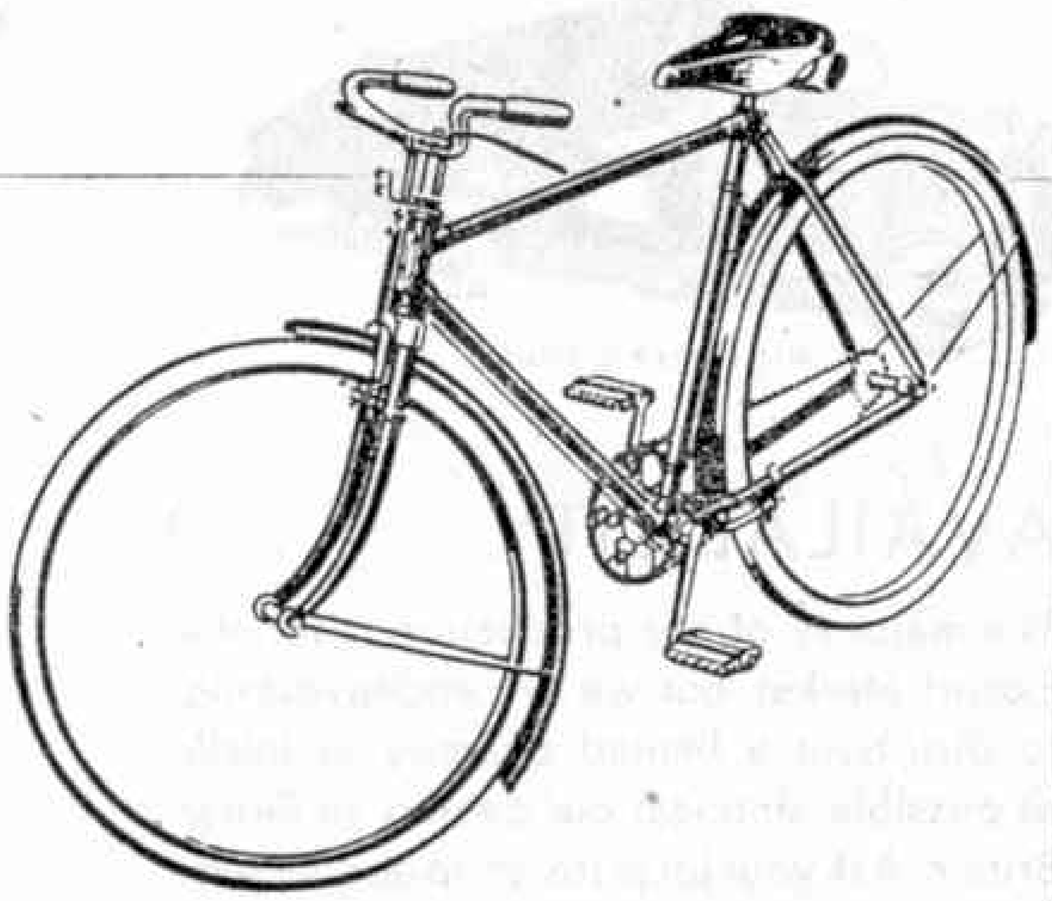
STRENGTH, SPEEDINESS AND SMARTNESS

STRENGTH C. I. Thornton, famous County cricketer, made several hits of 150-160 yards.



SPEED The Cheetah, probably the fastest of all animals, is used in India and Persia for hunting antelopes and other game.

SMARTNESS At the Royal Naval College, Dartmouth, the King's Dirk is awarded to the best all-round cadet. Smartness scores points, of course!



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Next Month: "QUEENS OF THE SKYWAYS." By J. W. R. Taylor

MECCANO MAGAZINE

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Binns Road
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England

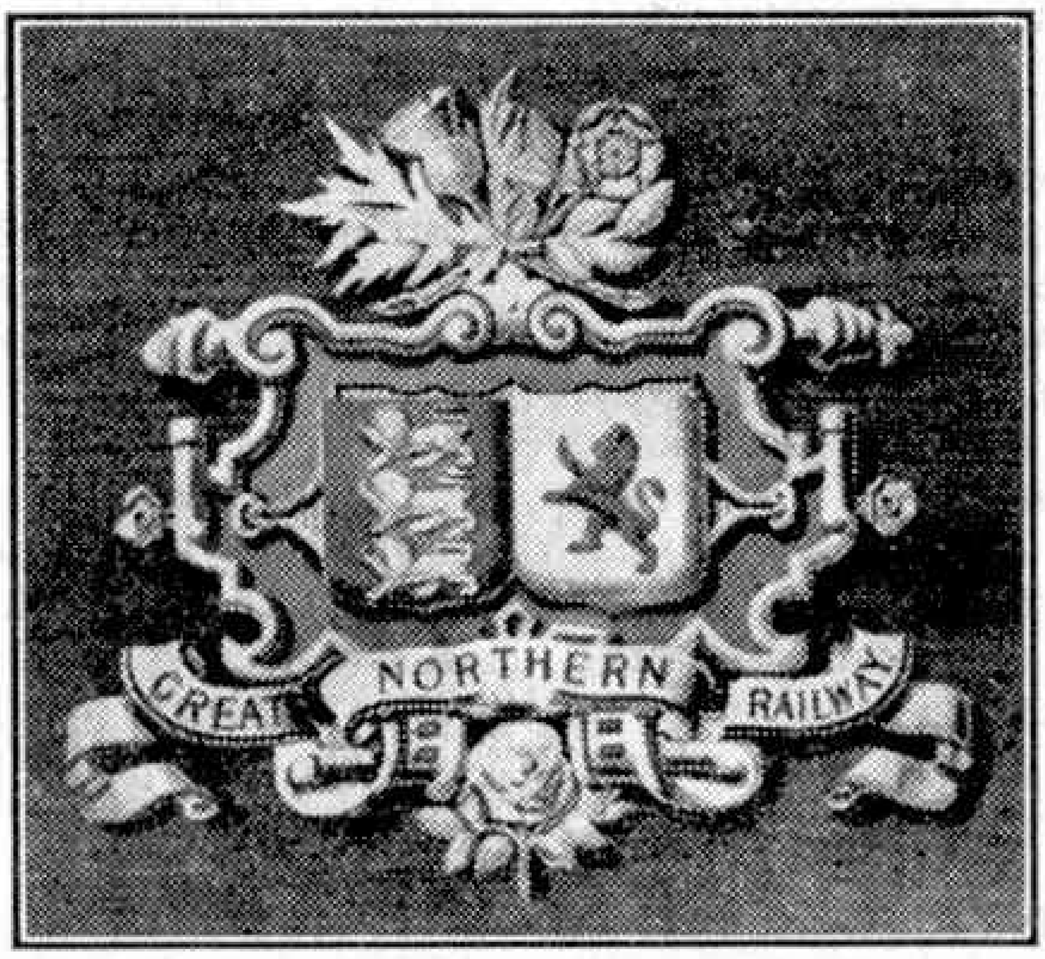
Vol. XXXIII
No. 3
March 1948

With the Editor

Britain's New Airspeed Record

On 6th February, Squadron-Leader "Bill" Waterton flew a standard Gloster "Meteor" IV jet fighter through gathering darkness and bad weather at nine miles a minute, to give Britain a new world airspeed record over a 100-kilometre closed-circuit. A few hours earlier, he had beaten the existing record set up by John Cunningham in a "Vampire," with a speed of 515 m.p.h., but was not satisfied. His second attempt raised the record to 542.9 m.p.h.—a figure that will take a lot of beating.

The 100-kilometre closed-circuit record rates second to the world's absolute speed record over a 3-kilometre straight course, which is held by the American "Skystreak." But it requires even more skill, for the aircraft has to be flown with great precision round a specially-marked course. Thus, to establish a new record in such conditions, when the course had to be marked by Very lights, is a great tribute to the skill of Squadron-Leader Waterton and to the sturdy efficiency of the 7-year old "Meteor" design.



The Great Northern Railway coat of arms representing England and Scotland.

The G.N.R. Centenary

This month occurs the centenary of the opening of the first section of the former Great Northern Railway. A special article appears on pages 84–86.

I have always had an affection for the old G.N.R., dating from the time when I used to travel quite frequently from Leeds by the 10.15 a.m., arriving at King's Cross at 1.55. There always seemed to be nice people in the diner. In those days its trains were fast and punctual, travelling over its track was smooth, and although it was not such a great or extensive line as its posters and maps sometimes suggested, it was a smart, well-managed system.

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The Bristol 171 helicopter. Photograph by courtesy of the Bristol Aeroplane Co. Ltd.

Helicopter Developments

By John W. R. Taylor

"ARE you comfortable?" asked my companion.

"Yes," I gulped, rather uncertainly.

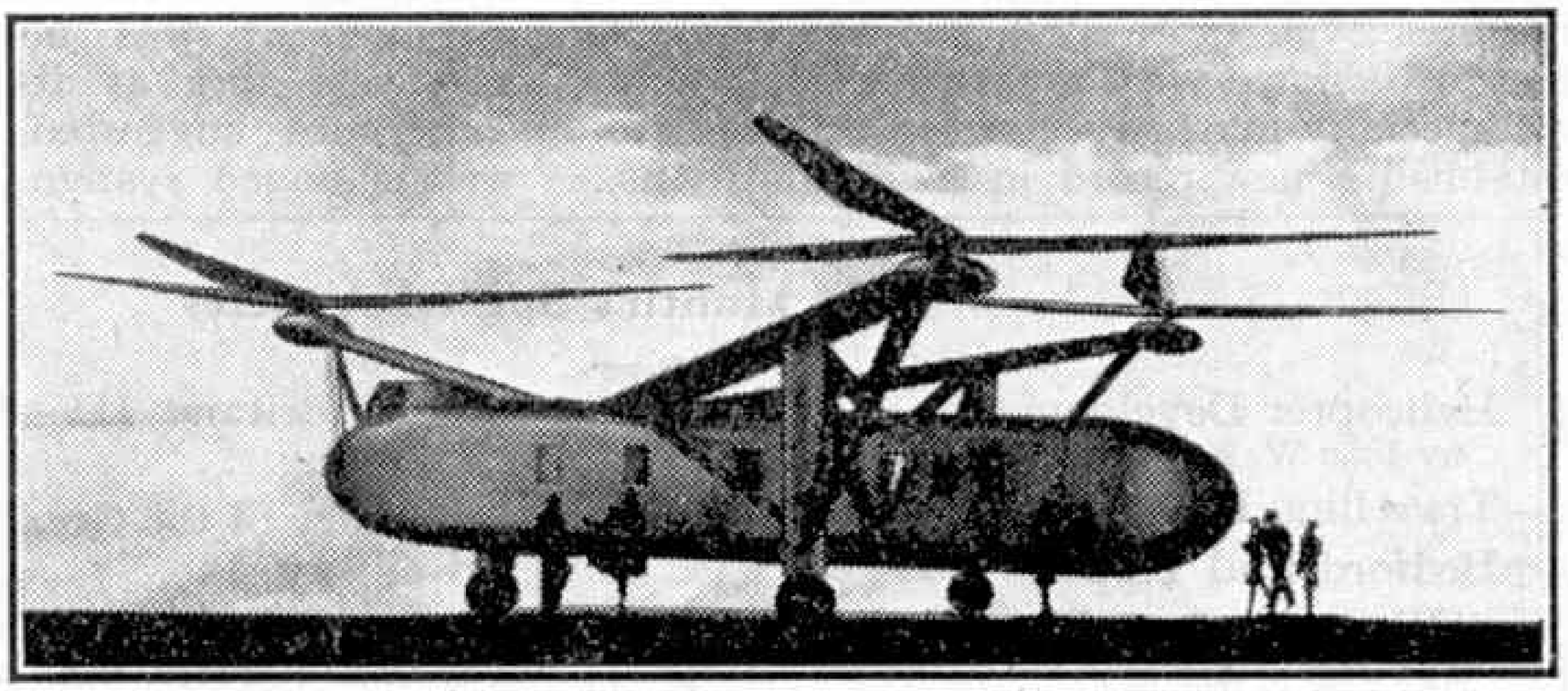
"O.K. then, here we go."

The roar of the engine behind us grew louder, so did the "whooshing" noise a few feet above my head. I felt my seat vibrating and, suddenly, the ground dropped away from beneath us. At least it seemed as if the ground dropped away; actually we went up, straight up like a lift, for I was making my first flight in a helicopter.

Once you get used to the absence of wings, the upstairs position of the "propeller" and the strange sensation of sitting in a glass box a long way above the ground, flying in a helicopter is little different from flying in an orthodox aeroplane. The big advantage is that if you wanted to fly in and have tea with your favourite aunt you would not have to look round for an aerodrome, provided that she had a lawn a little bigger than a tennis court on which you could alight and take off.

Of course it is not quite as simple as all that yet, for the helicopter still needs years of careful development. But it is undoubtedly a ray of hope in a gloomy world of ever-lengthening runways and ever-increasing take-off and landing speeds. Modern air liners are getting so large that few aerodromes are big enough to accommodate them; consequently there is little hope of bringing off a successful landing in the event of engine trouble *en route* between large airports. But a forced landing will hold few worries for the helicopter pilot of the future who will be able to get down safely almost anywhere.

Unfortunately, at the moment the helicopter itself has little chance of finishing up in one piece if its motor fails at low altitude. In his article on helicopters in the December 1947 *"M.M.,"* Mr. C. G. Grey referred to the difficulty of changing quickly the pitch or "twist" of the rotor blades to obtain auto-rotation in an emergency, and so retain enough "lift" to keep the helicopter airborne. The possibility of such action becoming necessary is remote, for modern aero engines are very reliable; but even so a satisfactory solution to the auto-rotation problem must be found.



Cierva W.11 "Air Horse," designed to carry 24 passengers or three tons of freight. Photograph by courtesy of The Cierva Autogiro Co. Ltd.

British Helicopter Progress

One reason why Britain seems so far behind America in the design and use of helicopters is that our designers are trying to overcome the auto-rotation problem before putting their machines into production. For example, Bristols hope to achieve this in their new Type 171 by using a high kinetic energy rotor—one which turns with such force that, if the engine failed, the rotor would still "free-wheel" fast enough to prevent an excessive sinking speed, and would even enable the helicopter to hover for a few seconds before touching down.

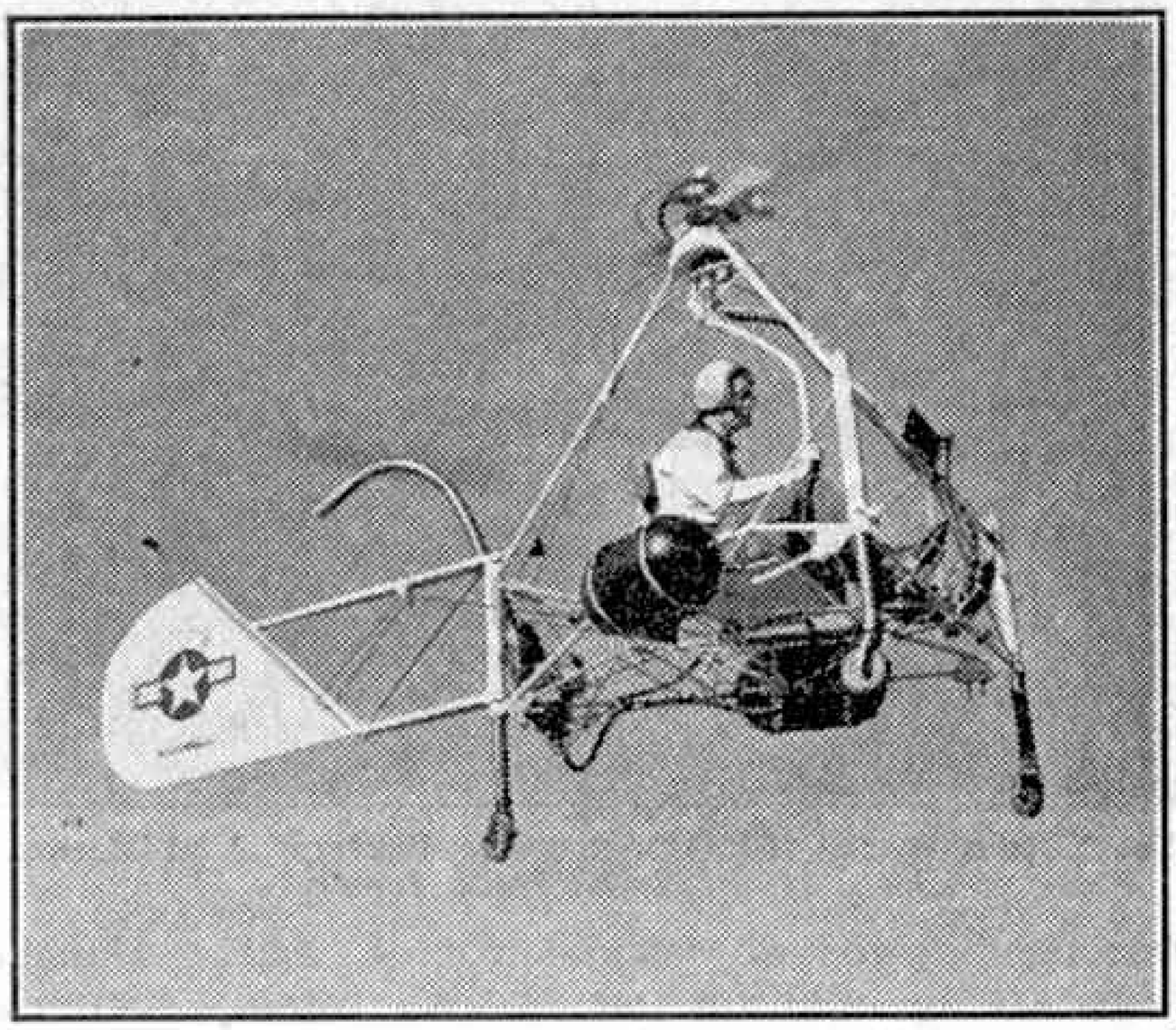
Fairey Aviation have tackled the problem from a different angle in their Gyrodyne. They have designed the rotor mechanism so that the blades are set in the auto-rotative pitch range for normal flight; this should eliminate all risks of an accident in the event of engine failure.

British companies are building a complete range of helicopters from the 4-seat Bristol and Fairey taxi-planes to giant machines with the passenger accommodation of a "Viking" air liner. For the Cierva Company are completing a helicopter known as the W.11 "Air Horse," which is powered by a "Merlin" engine and will carry three tons of freight or 24 passengers for 232 miles at 116 m.p.h. The W.11 has a square-section fuselage, and the freighter version is fitted with large sideways-hinging doors at its tail through which vehicles can be driven into the interior. It should be ready for flight soon, and as it will be able to operate from any space just over 100 ft. sq., such as a railway siding, dock, town square or near a factory, it will combine for the first time the many advantages of air transport with the ubiquity of road transport.

A special version of the "Air Horse" known as the "*Spraying Mantis*" is also being developed for crop dusting, while a smaller machine on the same lines will be the W.12, powered by two Alvis "Leonides" engines and designed to carry 12 passengers or 1¼ tons of freight. Both types may eventually be adapted to use jet engines.

Although these helicopters are undoubtedly ambitious, there is no reason to doubt their success, for the Cierva Company have been designing rotating-wing aircraft since 1926. By 1939 they had given Britain the lead in this type of aircraft. They had to interrupt their research during the war, but are now going all out to regain that lead.

It will not be an easy task, for the Americans are going in for rotating wings in a big way and new types of helicopter seem to appear almost daily. Some look promising, others can be termed 100 per cent. safe only because they refuse to fly. There are helicopters with counter-rotating rotors, intermeshing rotors, one rotor at each end, and even a "simplified model" in which the direction of flight is changed by moving the whole cockpit instead of by tilting the rotor.



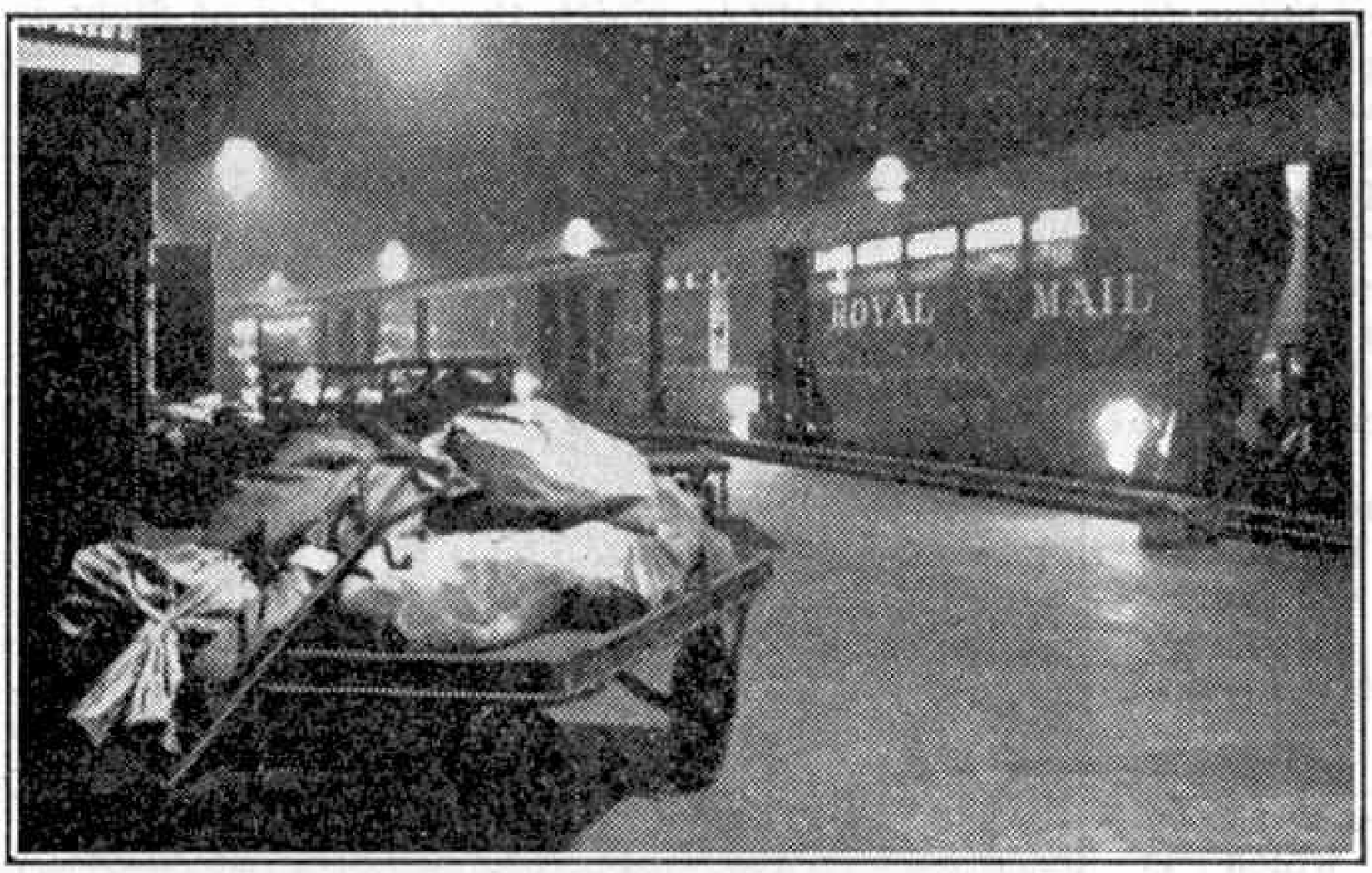
"Little Henry," an experimental ram-jet helicopter produced by the McDonnell Aircraft Corporation, U.S.A., by whose courtesy this photograph is reproduced.

One of the most interesting American prototypes is "Little Henry," an experimental ram-jet helicopter built by the McDonnell Company. It is not very beautiful, in fact it looks more like an old iron bedstead fitted with a fin and rotor—an impression that is enhanced by what appear to be a couple of oversize hot water bottles strapped underneath it. But the two bottles actually contain fuel for the ram-jets which are mounted at the tips of the two-bladed rotor.

The idea of a jet-driven rotor is by no means new, but "Little Henry" represents the first successful application of this type of power unit. It *is* successful, for the aircraft weighs only 310 lb., yet can lift 300 lb. of payload. This is all the more remarkable in view of the fact that each jet unit weighs only 10 lb.

"The Travelling Post Office"

THIS month's cover picture, prepared from a photograph supplied by the former L.M.S., gives a splendid impression of the busy scene in a Travelling Post Office van. The *"T.P.O.,"* to use its familiar initials, provides the means of collecting, sorting and despatching mails while the train is on the run. Postal vehicles are regularly attached to certain passenger trains on various routes, and there are in addition one or two trains that run solely for postal purposes.



The "Down Special T.P.O." alongside Platform 2 at Euston. Photograph by W. Philip Conolly.

Let us, in imagination, go to Euston Station about 7.30 in the evening to see that most famous of mail trains, the *"Down Special T.P.O."* This is familiarly known as the *"West Coast Postal."* Spanning the gap from London to Aberdeen overnight, it provides a postal service by means of through vans and connections over the greater part of the Midlands and the North.

To-night the train consists of 13 bogie vans, although 14 is the usual load. Some are distinguished by the words *"Royal Mail"* boldly emblazoned on their sides; many have a posting box let into the side on a panel of familiar Post Office red with Crown and Royal Monogram complete. Letters posted in them on the down run carry the postmark, *"Down Special T.P.O."* We gaze with respect at the extending nets of rope, now folded back against the van sides, which pick up the mail from the lineside standards. These and the corresponding ground nets have to withstand the impact of the leather pouches used for mail exchange, each weighing up to 60 lb. loaded.

The spring-governed swinging arms, known as traductors, on which the pouches to be despatched from the train are suspended, also attract our interest. In addition we cannot fail to notice, alongside the traductors, the characteristic round side lights shining like great eyes.

We must mind how we pick our way along the platform. There are mail bags, it seems, everywhere, and still more are arriving in the familiar G.P.O. motors along the carriage-way between platforms 2 and 3.

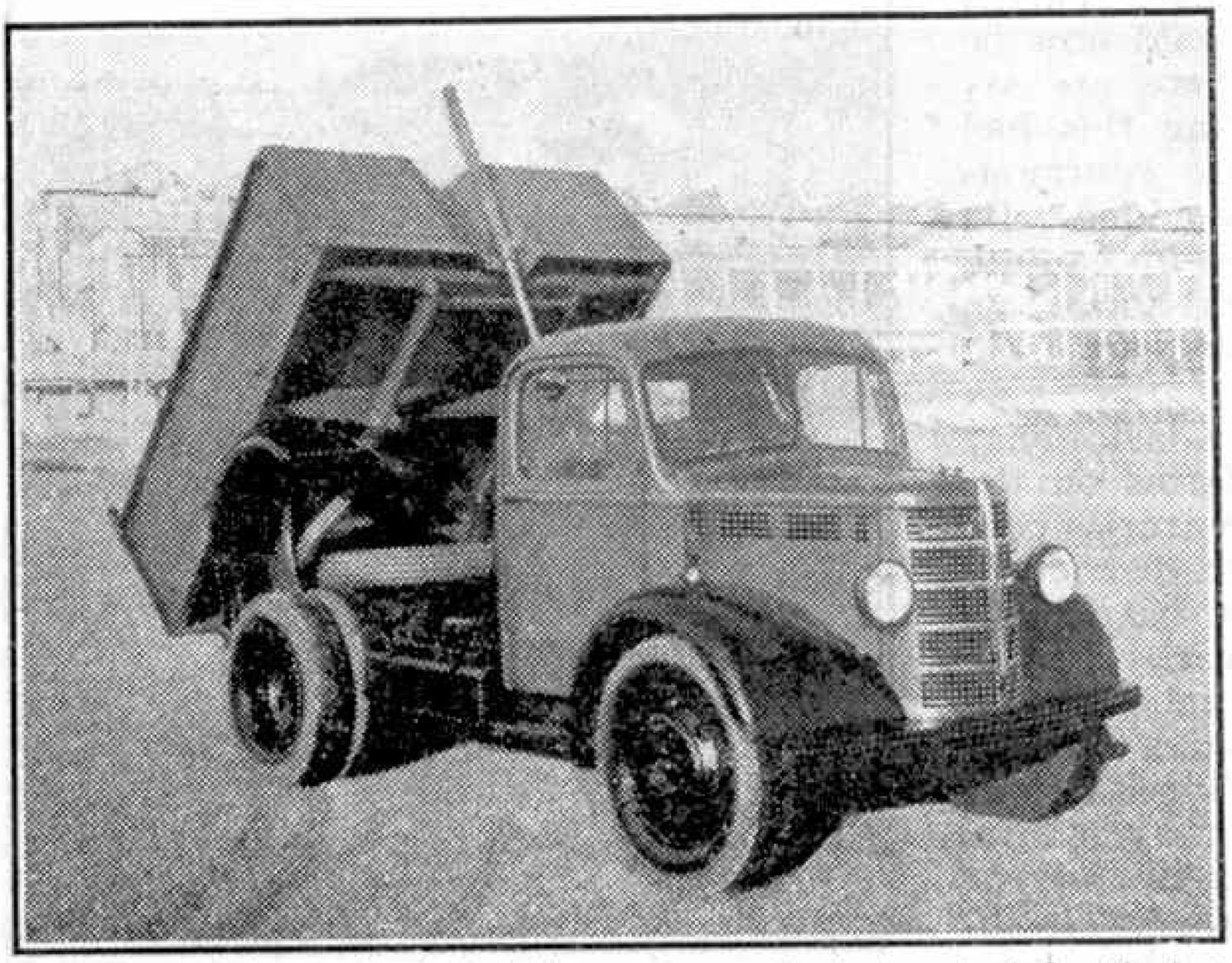
Starting at the head of the train we find there are four vans for stowage purposes, one bound for Liverpool, two for Manchester and one for Preston. With the Stranraer van that comes next, there begins that part of the train in which all the vehicles have their specially wide corridor connections on the near side. This is a peculiarity of true *"Postal"* stock; it allows the tables that we can see through the wide open doorways of the sorting vans to run the full length of the vehicles. Next come two vans for Aberdeen. The remainder of the train consists of Travelling Post Office Vans and a special *"Postal"* brake van. This part will ultimately be divided into two sections, one for Glasgow and one for Edinburgh.

By now it will be time to see what engine has backed on. To-night Class 5X 4–6–0 No. 5676 *"Codrington"* is in charge. Promptly at 8.30 p.m., aided by the engine that brought the empty train in, she begins to lift the *"Postal"* out of the terminus and up the incline to Camden.

A cheery wave from the travelling Postal Supervisor greets us near the platform end; and so another night's work on the *"Down Special T.P.O."* has well begun.

The Bedford End Tipper

DURING the war Vauxhall Motors Ltd. supplied the fighting forces of the Allied Nations with 209,096 Bedford trucks, and many thousands also were built for essential civilian use. When the time came to return to the manufacture of Bedford trucks with the familiar rounded radiator, the experience gained in the operation of the great fleet of military Bedfords proved of very great value.



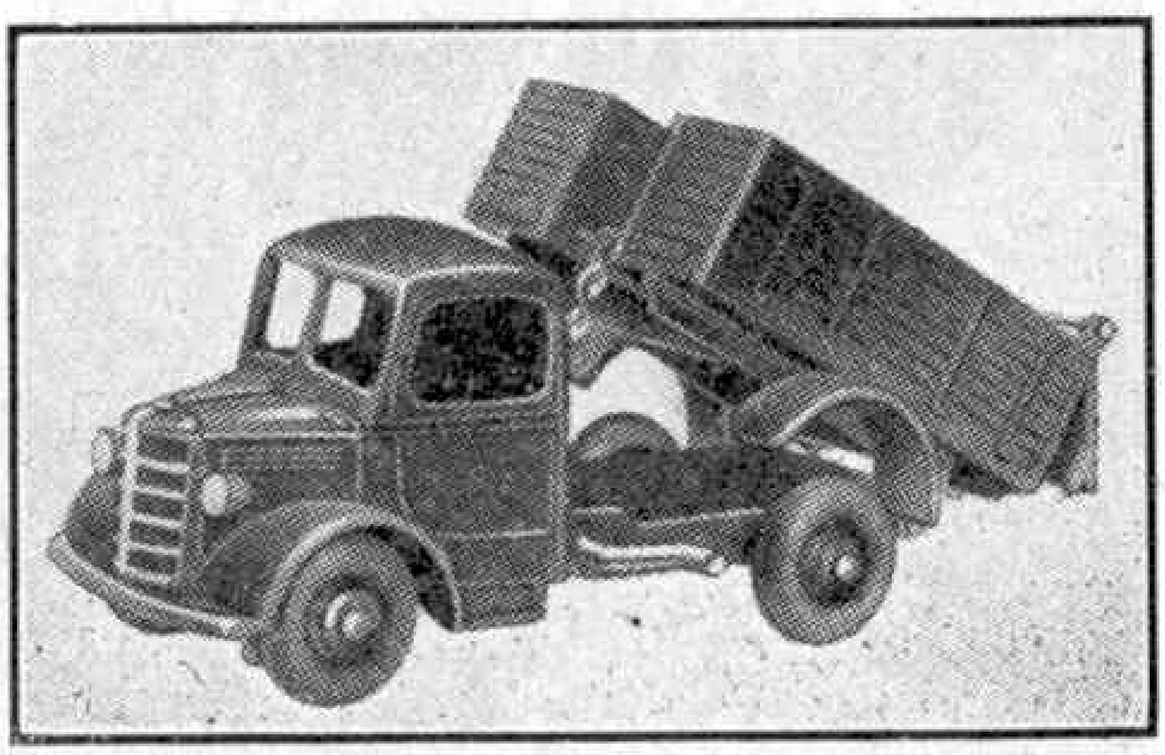
This view of the Bedford End Tipper shows the body raised for tipping by its hydraulically operated telescopic ram. Photograph by courtesy of Vauxhall Motors Ltd.

The new Bedford trucks are similar in basic design to those of the pre-war range, but many useful improvements have been introduced. The range includes three end-tipping models. The smallest of these is the 2–3 ton model, the tipper of which is operated by hand. The larger are the 3–4 ton and 5 ton vehicles, in which hydraulic tipping mechanism is incorporated. These have the same wheelbase and general features, the main differences being the use of heavier tyres and the fitting of heavy duty helper springs at the rear on the 5-ton truck. Each has a Bedford 28 h.p. six-cylinder engine, with a heavy duty four-speed gear box, and is fitted with servo-assisted hydraulic brakes.

Our illustration shows one of these trucks with the tipping mechanism in actual operation. The body has a steel underframe and a metal lined floor and tailboard, with hardwood sides, and the tailboard is hinged at the top to allow for easy tipping. The tipping gear is hydraulic and is operated by a pump driven from the engine. The ram is telescopic, and when fully extended gives a maximum angle of tipping of 45–50 deg.

A miniature of this fine end tipper is now included in the Dinky Toy series, and is shown below. External features such as the rounded radiator, the cab and bodywork, and the petrol tank on the offside of the chassis, are well reproduced, and the proportions are exactly right, giving the model a handsome and attractive appearance.

The tipping mechanism is fascinating. It is of course impossible to carry realism so far as the inclusion of a hydraulic mechanism in the miniature Bedford End Tipper, but the fun of tipping with the Dinky Toys model is retained by the incorporation of a worm mechanism that is brought into action by turning a handle on the near side of the chassis. The body and the rear wings then rise in the most realistic way, and the tailboard, which is correctly hinged at the top, can be released to allow a load of sand or gravel to be tipped.



Dinky Toys No. 25m, a realistic miniature of the Bedford End Tipper.

A Visit to a Peat Farm

Fuel from Low-Lying Somerset Moors

By Reece Winstone, A.R.P.S.

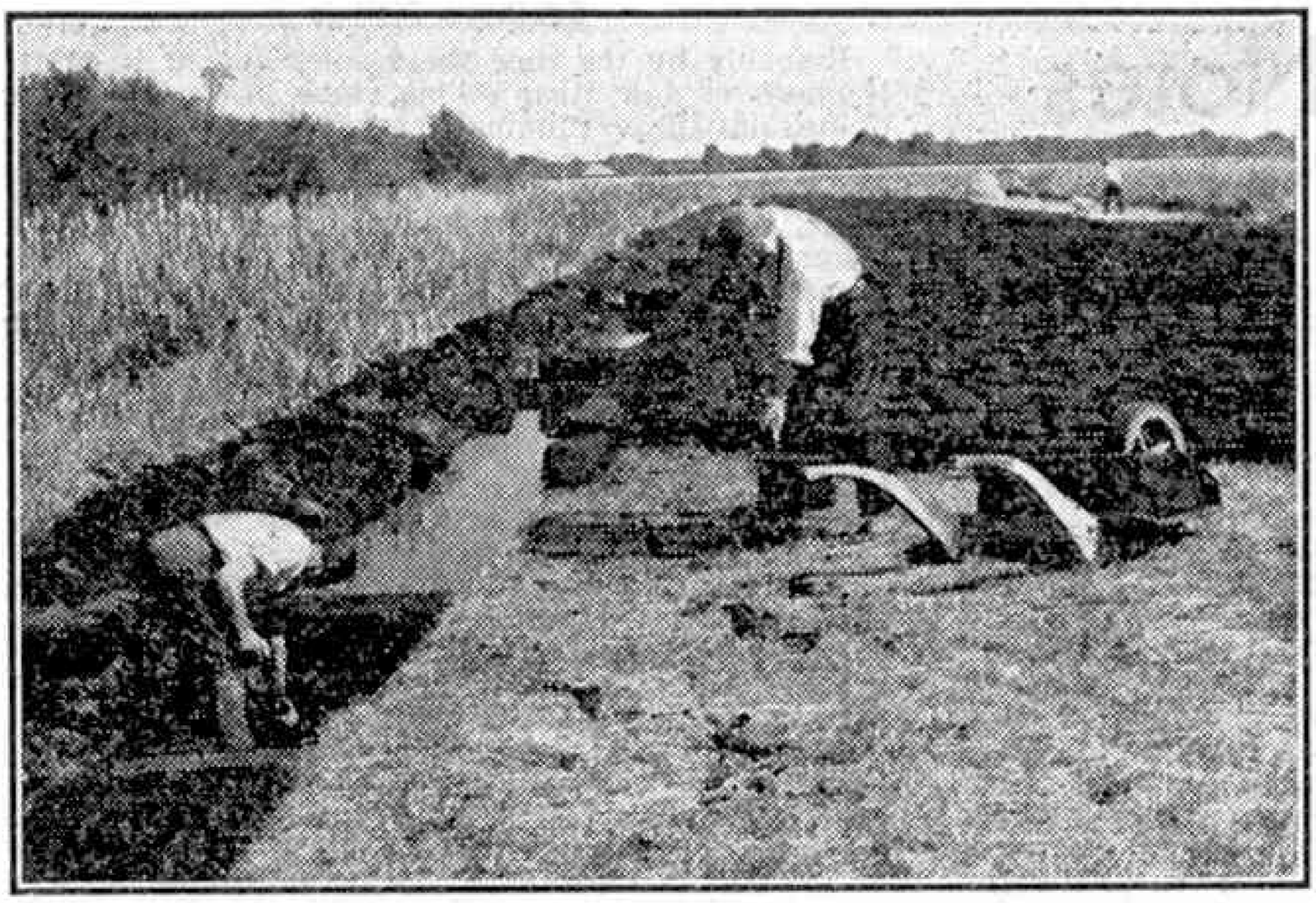
ONE kind of fuel is still unrationed in these times of coal shortage. This is peat, and the peat farmer should now be reaping a good harvest. There are six million acres of bogs producing this fuel in Britain, but there are also enormous deposits that might well be added. Its extraction is a calling that ties up capital, however, as the year's work shows no return until the peat bricks are sold in the autumn.

Down in Somerset, between Glastonbury and Meare, are many peat farms on the low lying moors. For many centuries peat has been dug in this historic district; it was harvested when the last battle was fought on English soil on nearby Sedgemoor to end Monmouth's rebellion of 1685; perhaps the industry dates back to the days of King Alfred "burning the cakes" at Athelney, or even to the romantic time of Arthur of Avalon and the advent of Christianity in Glastonbury itself. Still mistier days in history that may have seen Somerset peat put to good use are those of the lake dwellers of Meare in the prehistoric village two or three miles away.

On a recent visit I watched the stages of peat production and learned something of this interesting trade. The peat farmer's work opens in the spring, but is naturally subject to the weather. Given a good dry April, free from frost, he can make a start on the digging and drying of the peat, which represents an early stage in the production of coal. Deposits extend to some 11 ft. or so. The first step is to trace out what is called a "pit." Peat farming has its own jargon and these special words may vary from county to county. The scrub, bracken and surface growth must first be cleared away by scything, and then the ground is ready for the benches to be marked out. Each of these is about 50 or 60 ft. long and 7 "mumps" wide, that is 7 times 9½ in.,

Peat blocks or "mumps" being laid out to dry for a week, after which they are cut into three pieces. The peat cutter's wheelbarrow is of special low design and carries six blocks of 28 lb. each.

Tidying up a pit in readiness for marking out the peat for cutting in blocks.



On the left mumps of peat are being dug out of the pit, and in the centre they are being loaded for transport to the drying ground, where they are laid out in windrows. Distant workers clear bracken in readiness for further digging.

for a "mump" is the size of the chunks of peat as they will first be dug out of the pit, and these measure 9½ in. square, with a height of 8 in. When the position of the bench is decided upon, "unridding" follows, that is, the removal of the top soil to a depth of about 2 ft., by which the actual peat is uncovered. This top soil is not wasted; if it is not sold to nurserymen it goes into the previous bay and becomes top soil again.

A measuring stick traces the size of the mumps, and the turf scythe is then used to cut through the peat, through which it goes like a knife through butter. The turf scythe is reminiscent of an ordinary spade, but its handle is of dun withy, which comes smooth and springy to the hands. Each mump, being full of moisture, may weigh 28 lb. or so, so that it is no light work digging out the peat. The mumps are forked on to a peat barrow, a specially made low affair, with a big wheel but no legs, that holds six of them.

So the mumps are laid out for the first drying, stacked in "windrows," four wide with a gangway between. Perhaps a week later they will be dry enough to be split into three pieces of the size the public sees. This is all hand work, the only mechanical part being the draining. Even this is still done the old way on many farms, but a cheap 5 h.p. pumping machine run on diesel oil at a penny per hour is now coming into good supply. This will ease the heavy burden of using the "lathe ball" in the ditches.

When the peat has dried sufficiently in the windrows, it is piled loosely into "hyles," or heaps two or three feet high, allowing air to get to all the surfaces. Later still it is made up into "ruccles," the familiar skeleton pyramid piles 8 ft. or so in height, each containing about 800 turves. In summer's heat one may see field after field of these ruccles, perhaps 140,000 turves to each field.

The farmer is still at the mercy of the weather, as he cannot start till the frosts are all over, and if May or June are wet, only a few day's labour may be possible in these months. The wages earned by the diggers are good, around 30/– a day, but the job is a heavy one that means lifting 2,000 turves, or 25 tons of wet peat, per man on the average. How does this compare with coal-mining?

To close on an historical note, in the Middle Ages this right of the local people to cut peat was jealously guarded and became known as the "Common of Turbary."

A 5 h.p. diesel engined pump removes water from the pit to a drainage ditch.

Railway Notes

By R. A. H. Weight

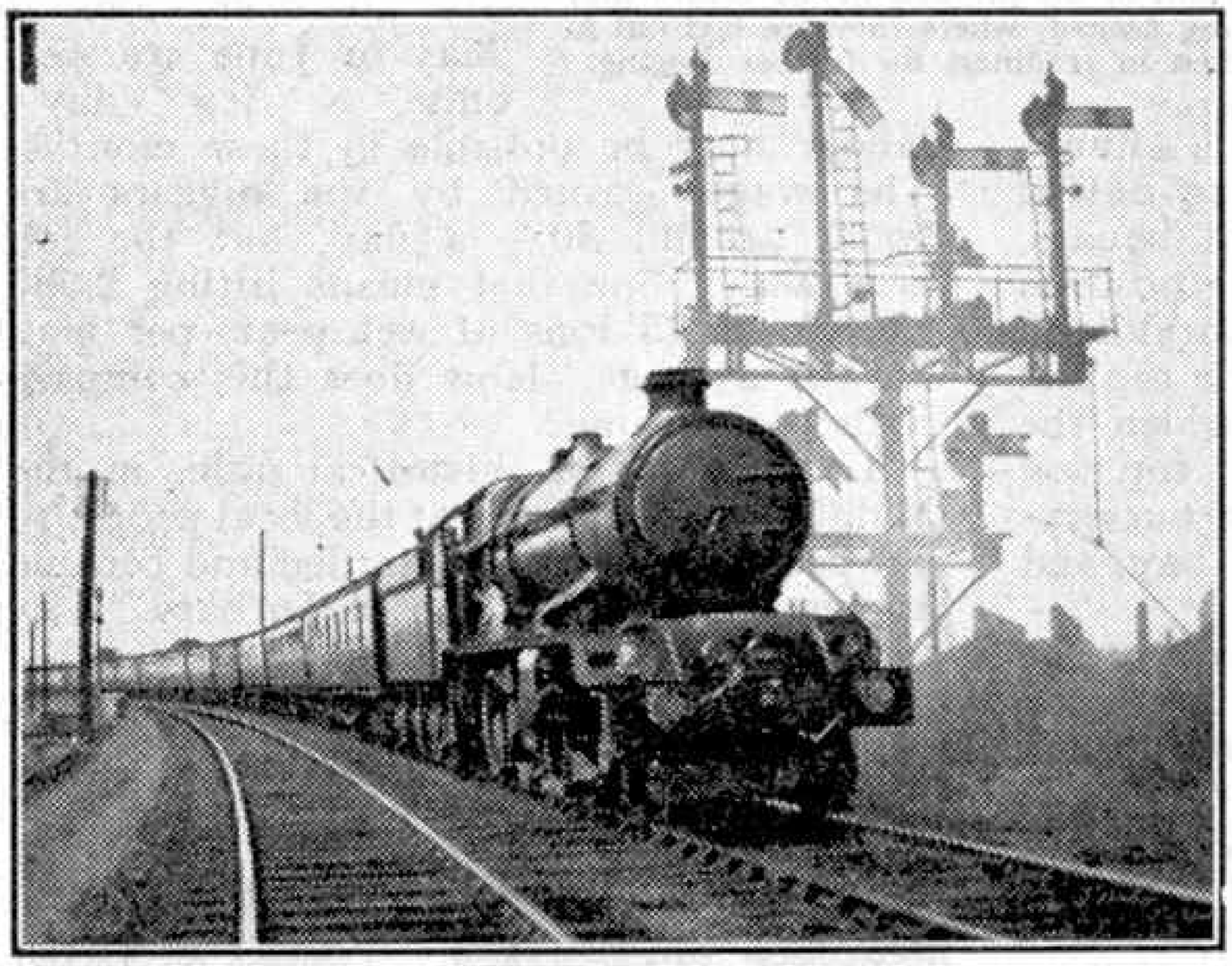
London Midland Region

As headings we are adopting the new Regional titles, but for the sake of clearness we are including at present news of former L.M.S. locomotives in Scotland under the London Midland heading, although for administrative purposes L.M.S. and L.N.E.R. lines north of the Border are being merged into one Scottish region.

New engines placed in service about the end of 1947 included 4–6–2 class "7" No. 6256 "*Sir William A. Stanier, F.R.S.*," 5A, Crewe North, to which shed are also allocated class "5" 4–6–0s Nos. 4765–7 having roller bearings, as has No. 4764 shedded at 32A, Inverness. Others were class "4" 2–6–4Ts, built at Derby for the Lancashire area, Nos. 2292–4, 23C, Southport; No. 2295, 24A, Accrington; and Nos. 2296–9, 2187–9, 25F, Low Moor, with 0–6–0 diesel shunter No. 7129, 21A, Saltley. Diesel-electric main line locomotive No. 10000, 1B, Camden, was loaned at first to Derby and underwent successful trials. Class "4" 2–6–0 freight engines of new design were Nos. 3000–2, 5B, Crewe South.

Among interesting withdrawn locomotives we notice three "Prince of Wales" "4P" 4–6–0s, Nos. 25694, 25775 and 25845, the last having been L.M.S.-built with unusual outside Walschaerts gear; 4–4–2T No. 2105, which began life in 1900 as one of the powerful "51" class, all up to now still in service, named "*Charing Cross*," painted bright green and fitted with Westinghouse brake on the London-Southend passenger service of the London, Tilbury and Southend Railway. No. 16920 listed as condemned was the last of the Drummond No. 1 class of Glasgow and South Western 0–6–2Ts, leaving one modified similar engine as the sole representative of the 528 G. & S.W.R. locomotives taken into L.M.S. stock in 1923.

A commendable number of long non-stop runs are comprised in the Western Division improved winter express services now operating. New longer turntables are being installed at Belle Vue (Manchester), Bournville and Llandovery.



An up express in charge of No. 6012 "King Edward VI" approaching Reading. Special slip distant signals are seen below the home signals. Photograph by H. M. Madgwick.

Southern Tidings

Probably by the time these notes appear in print, locomotives and other rolling stock in various parts of Britain will be running lettered "*British Railways*" instead of with the names or initials of the grouped or independent railways familiar for the past 25 years. It appears that in order to distinguish the locomotives or vehicles of each new Region, a small letter will be prefixed before the running number, thus: s 21C 158, s1891, etc. It is not yet known whether this arrangement will be permanent or universal.

Names allotted to light "Pacifics" altered to "Battle of Britain" standard include Nos. 21C 156, "*Croydon*" and 158 "*Sir Frederick Pile.*" Several former L.B.S.C. engines have lately been under repair at Brighton Works, as in the old days. A good many Eastern and Central Section 4–4–0s are stored. "T9" 4–4–0 engines Nos. 113, 280, 314 and 713 have been equipped for electric lighting. The removal of the external snifting or relief valves continues on superheated locomotives of various types. These are not regarded as essential.

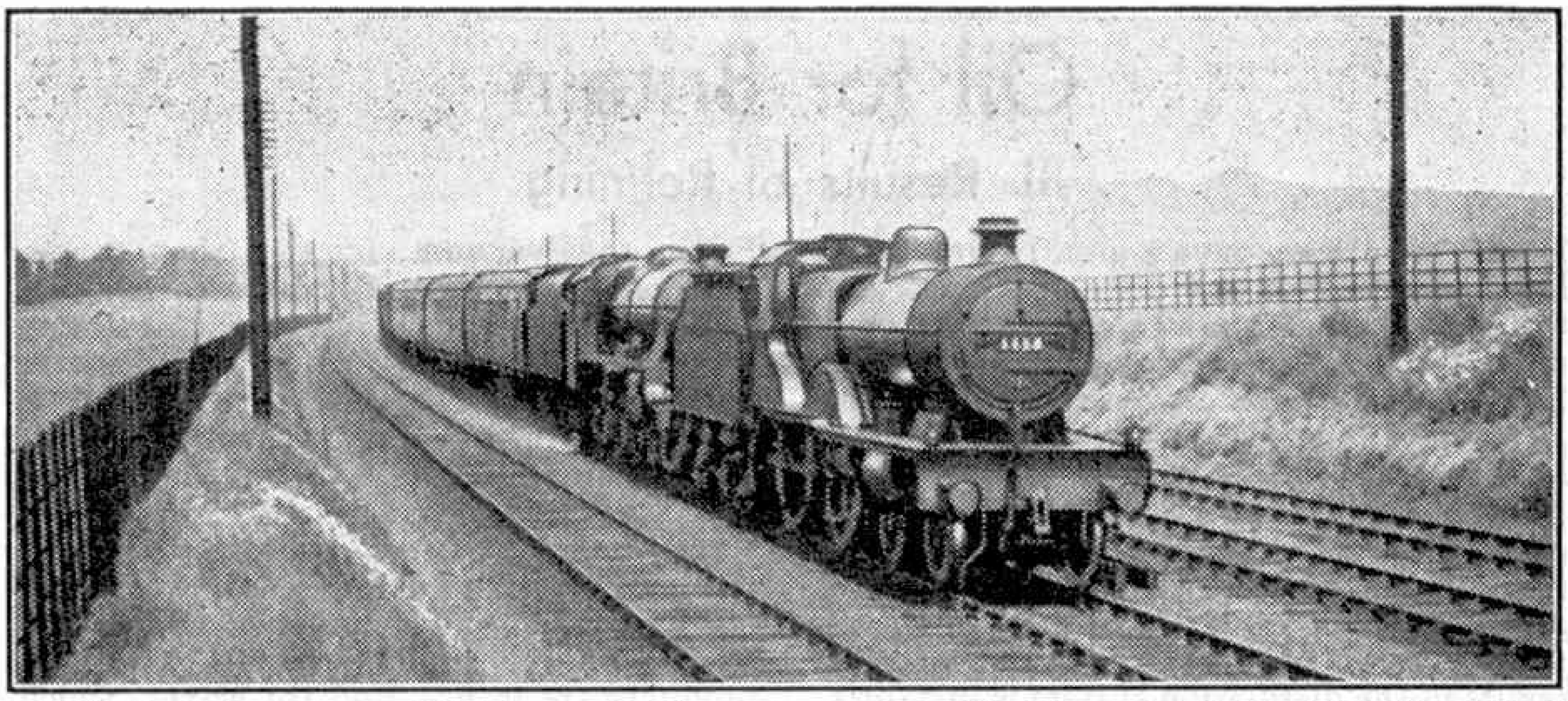
The through London-Paris sleeping car service, popular before the war, was resumed on 15th December last, conveying first and second class passengers between the two capitals without change. Transfer of the cars is effected at Dover and Dunkirk to or from the metals of the British Southern Region and the French Northern, the intermediate link being the rail-equipped oil-burning Southern steamers "*Twickenham Ferry*," "*Hampton Ferry*" or "*Shepperton Ferry*" which also carry ordinary passengers, goods wagons, motor cars and cargo. For hauling the trains on the English side, 4–6–2 engines Nos. 21C 156–7 are allocated to Dover, though two Eastern Section 4–4–0 locomotives are sometimes used. The special headboard is of deep blue with moon and star effects.

Some smart running was recently recorded on the up morning breakfast-car express from Folkestone to London, with 11 coaches, about 375 tons, hauled by "West Country" No. 21C 163. After calling at Shorncliffe to take up passengers, a smart run was made over the 13¼ miles to Ashford stop in 17¼ min., including two brakings between which maxima of 74 and 69 m.p.h. were touched downhill, after attaining 50 m.p.h. on the rise before Westenhanger. On restarting from Ashford the driving wheels slipped somewhat, though high speeds were soon attained, including 75–76 m.p.h. past Headcorn, then 74 before Paddock Wood, where dead slow running was necessary on account of roadbed renewal in progress. An excellent climb was made between Tonbridge (service slack) and Sevenoaks, with a lowest speed of 39 m.p.h. on the 1 in 122 up, but an unfortunate signal delay before Knockholt made timekeeping impossible. Nevertheless the net time into Cannon Street terminus after cautious running through the congested inner suburban area was no more than 64 min. for 55 miles in from Ashford, smartly allowed 65 min.

It is intended ultimately that all 4–6–2 locomotives numbered 21C 101–48 shall carry "West Country" names; those with numbers 21C 149–90, of which No. 171 upward are still to be built are allotted "Battle of Britain" names.

News from the Western Region

New 0–6–0 goods engines numbered 3210–17 had been completed by the beginning of this year. The names "*County of Bucks*" and "*County of Carnarvon*" respectively have been given to 4–6–0s Nos. 1001 and 1010. The 1948 plans include the relaying or



A double-headed up express at Tring summit. The engines are 4-4-0 No. 1118 and 4-6-0 No. 5563 "Australia." This and the lower illustration on this page are by H. C. Casserley, Berkhamsted.

resleepering of 490 miles of track, as well as the painting of about 100 large and small stations. Remarkably extensive orders have been placed with five firms of repute in the locomotive world for the construction by contract of 150 0–6–0 enlarged pannier type tanks of the 9400 class.

On the opposite page we reproduce an interesting photograph showing an up express approaching Reading, which is to slip a coach just before passing that station. Owing to the curve on the main line from the Newbury direction signals are not easily sighted by the guard in charge of the slip portion, so the lowest distant signals in the illustration are provided to indicate to him when in the clear position that the train has a clear road right through Reading and that he may detach at the normal spot. Slip coaches are regularly detached at Reading, Didcot and Bath.

A very fast sprint was made by a light special train last autumn hauled by No. 5056 "*Earl of Powis,*" of the "Castle" class, which started towards London from Reading in order to demonstrate additional A.T.C. cab signalling equipment provided for tests on the engine as well as at certain points along the line where double yellow signal indications had been erected. At all main line distant signals an audible indication is given to the driver of former G.W.R. engines and if a warning signal is not acted upon brakes are automatically applied. This was allowed to take place at Farnham Road Signal Box very effectively. Previous to this the very high speed of 96.4 m.p.h. was attained on almost level track about 10 miles from Reading start.

Normally, maximum speeds at present do not exceed about 75 m.p.h., and the current quickest start-to-stop scheduled runs include the following: from Paddington to Chippenham, 94 miles in 101 min., average 55.8 m.p.h. (6.30 p.m.); to Bath on Fridays and Saturdays, 106¾ miles in 115 min., average 55.7 (1.15 p.m.); Swindon-Paddington, 77¼ miles in 85 min., average 54.5; Paddington-Taunton, 142¾ miles in 156 min., average 54.9 (11.0 a.m.).

Eastern and Northern Regions

Reference is included in these notes to the erstwhile L.N.E.R. locomotives in Scotland.

"Pacific" No. 525, of the new class "A2" designed by Mr. A. H. Peppercorn and named after him, is stationed at Doncaster, painted green, having single chimney, steam collector dome, wider cab of the Gresley pattern with improved look-out, and outside cyls. between the bogie wheels. These are placed nearer the leading driving wheel than on the Thompson "Pacifics," giving a more compact appearance than on the "A2/3" series. There are three 19 in. by 26 in. cyls., and three sets of Walschaerts' gear. Boiler pressure is 250 lb. per sq. in., and tractive effort 40,430 lb.

No. 526 "*Sugar Palm*" was in service early this year from York shed on the King's Cross "*Flying Scotsman*" turn, being followed at short intervals it was understood by Nos. 527–8, intended to be named "*Sun Chariot*" and "*Tudor Minstrel.*"

Experimental painting of rolling stock in various past companies' colours is taking place before a decision is reached on future liveries.

"J50" 0–6–0T E8929 was the first locomotive noted from Doncaster Works lettered "British Railways" and carrying a prefix letter indicating Eastern Region.

As No. 47 "*Donovan*" has been converted to "A3" 4–6–2 standard, the sole "A10" is now No. 68 "*Sir Visto,*" in Scotland. Eighteen "B1" 4–6–0s now carry names of Directors in office during 1939, which we hope to detail in an early issue.

The last fine looking ex-Metropolitan 4–4–4T is withdrawn: this wheel arrangement becomes extinct.

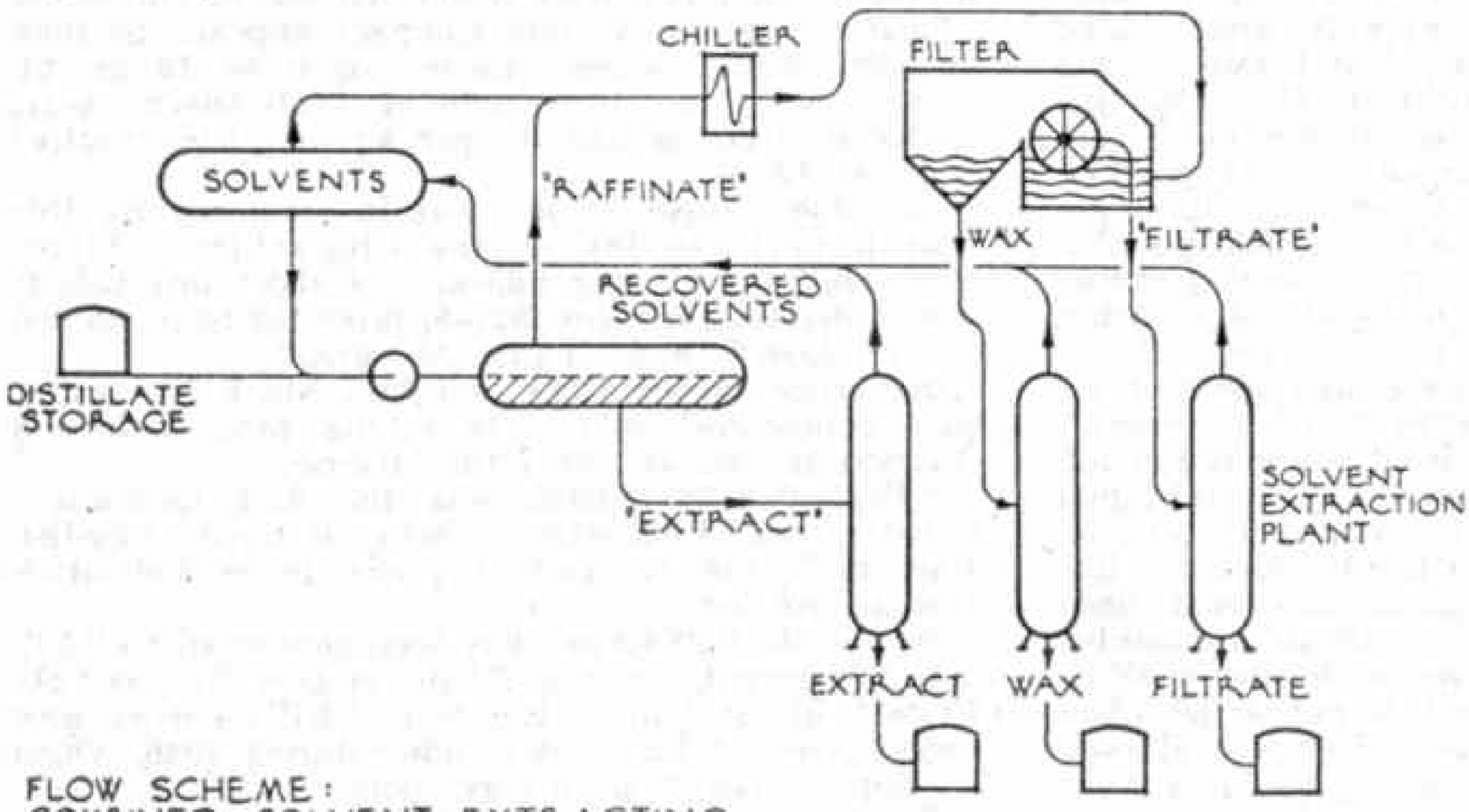
A smartly turned-out station pilot engine at Newcastle Central in all the glory of the L.N.E.R. green livery, with black and white lining.

Oil for Britain

III. Results of Refining

LAST month we gave a greatly simplified description of the distillation process. Critical readers may wonder *how* the tower top temperature is kept at 165 deg. C; *why* the trays are always full of liquid; *why* everything proceeds so smoothly. The answer to all these queries would be to describe the wonderful series of automatic controls with which the distillation unit is equipped and which operates from a central control room. A rise in temperature or a fall in level at any one of fifty points in the distillation system is instantly corrected by instruments in the control room which adjust valves automatically to vary the reflux flow, or the fuel oil supply to the tube still furnace, or one of the sidestream flows, so that everything returns to normal again. For example, the tower top temperature is controlled to within half a degree centigrade to ensure sidestreams of constant accuracy.

Moreover, no mention has been made of the intricate heat exchanger system employed to conserve heat down to the last previous thermal unit. But all the hot products from the tower—vapours, lubes and residue, circulate round the incoming crude in heat exchangers so that the crude is heated to nearly 200 deg. C. before it enters the tube still. Nevertheless, we have dealt with the distillation unit in some detail, because this separation of the crude into groups of liquids with different boiling ranges is fundamental to all petroleum refining. From the vacuum fractionating tower, the kerosene, gas oil and residue are "finished" products; but the three lube oil distillates require further treatment in order to make them into either (i) lubricating oils, (ii) transformer oils, (iii) "technical white" oils, or (iv) medicinal liquid paraffins. The distillates as they stand have two disadvantages for all these applications because they contain (a) aromatics and impurities which will react with oxygen and metals when the products are in use, and (b) waxes, which will solidify at low temperatures and upset the flow properties of the products. Logically, the first treatment of the distillates removes the aromatics and the waxes. Both operations are performed in one plant: the Combined Solvent Extraction and De-Waxing Plant.



FLOW SCHEME: COMBINED SOLVENT EXTRACTING AND DEWAXING PLANT

MANCHESTER OIL REFINERY.

The distillate is pumped from storage into a high pressure mixing pump, where it is mixed with "solvents"—liquid sulphur dioxide and a small proportion of benzole. (Benzole is commercial benzene, C_6H_6, referred to last month). The mixture of distillate and solvents passes under pressure into an "extract settling tank." The solvents dissolve the aromatics in the distillate, forming a heavy solution—the "extract"—which settles as a lower layer in the base of the tank, whilst the aromatic-free distillate, termed "raffinate," forms the top layer. It so happens that benzole and sulphur dioxide are also of great assistance in de-waxing. This factor makes it convenient to perform both operations in one plant. But, for de-waxing, a solvent consisting mainly of benzole is required. Accordingly, the raffinate is withdrawn from the top of the settler and further benzole is added.

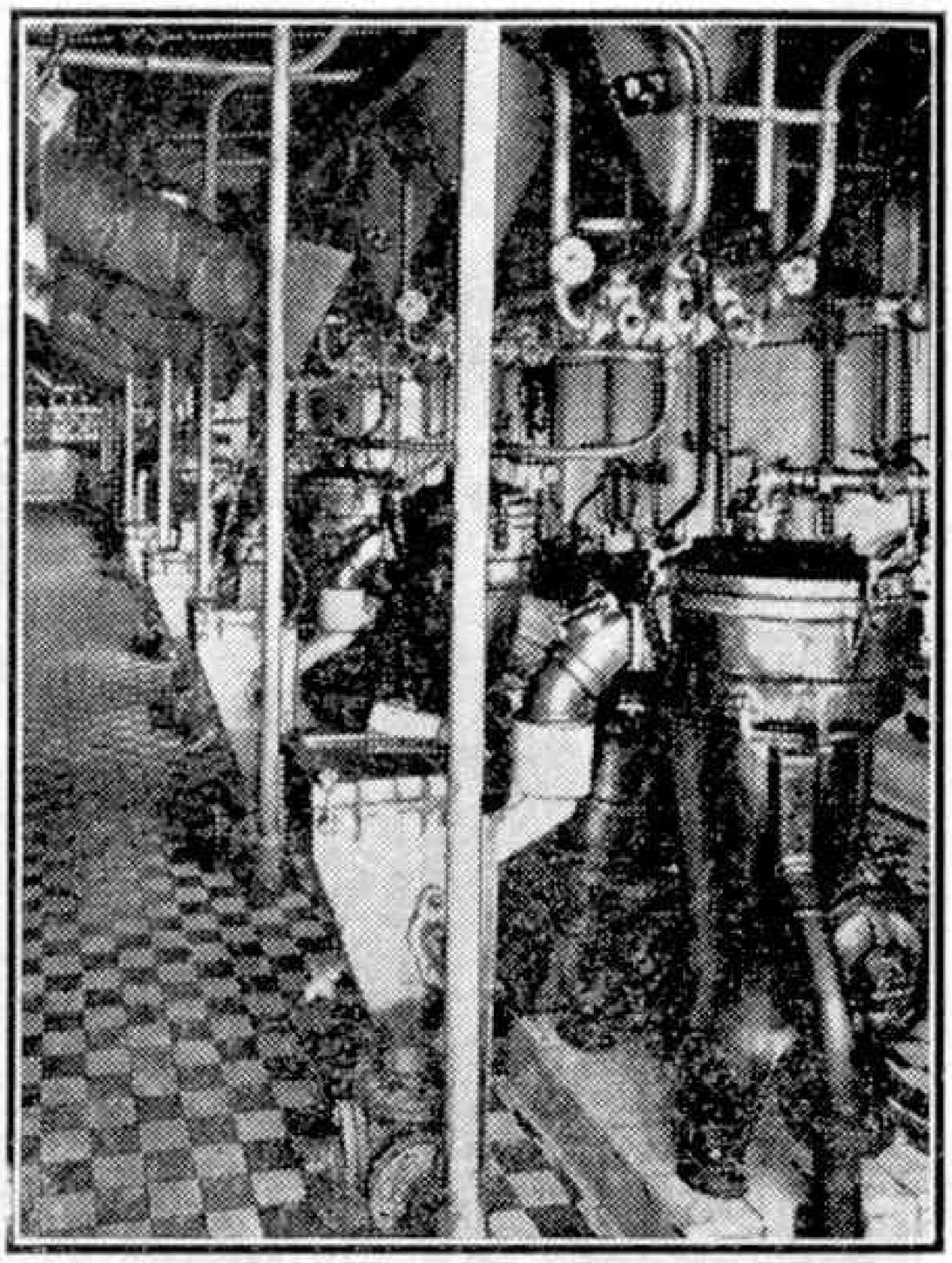
The mixture is then chilled (by a sulphur dioxide refrigeration system) to −15 deg. C., at which temperature the waxes crystallise out, while, in the presence of the solvents,

the rest of the raffinate remains quite fluid. The waxes are then filtered off in a mechanical rotary filter, the filtered raffinate being termed *filtrate*.

It remains to recover the solvents from the extract, wax and filtrate. Each is pumped to a separate set of "solvent evaporators" where the benzole and sulphur dioxide are boiled off by steam heating and evaporating in a series of vessels under decreasing pressures. The benzole and sulphur dioxide are pumped to separate storage tanks for re-use, whilst the extract, filtrate and wax are pumped to storage to await further treatment.

The extracts from the three lube oil distillates form a recently developed and valuable series of products for use in the manufacture of paints; printing inks; core oils; natural and synthetic rubber; putty; and as plasticisers.

The wax, of which only a very small amount is recovered from crudes treated by M.O.R., is employed for purposes such as manufacture of wax proof paper, candles, etc. The filtrates however have to undergo many further treatments before they are considered suitable for use. Each filtrate is treated separately to produce a particular product. All the processes employed are of a chemical nature, as opposed to the boiling and dissolving operations so far described and are termed, in general, "chemical treatment."



Centrifuge Room in which unwanted constituents are centrifugally separated from lubricating oils after chemical treatment. Photograph by courtesy of Manchester Oil Refinery Ltd.

(i) Lubricating Oils

All three filtrates are refined to yield lubricating oils, the filtrate being selected to yield a finished oil of the desired viscosity. The filtrate as it comes from the solvent extraction and de-waxing plant still contains a small proportion of aromatics and some reactive impurities, which would oxidise and form sludge in lubricating oils if they were not removed. The filtrate is mixed with concentrated sulphuric acid in a centrifugal pump. The acid reacts with the aromatics and impurities to form an "acid sludge" which is removed continuously in centrifugal separators (rather like a large version of the cream separator one sees in a dairy). The oil, as it now contains a certain proportion of acid, is termed "acid-oil." It is run into mixing tanks where lime and "activated clay" are added. The lime neutralises the acid and the clay absorbs the remainder of the impurities, imparting a satisfactory colour to the oil. The oil, lime and clay mixture is then pumped through a tube still into a small non-reflux vacuum tower where "light ends" and every trace of moisture are driven off by superheated steam.

The lime and clay (originally nearly white but now a dirty black) are then filtered from the oil in a series of special filter-presses, after which the oil is ready for blending into a finished lube oil.

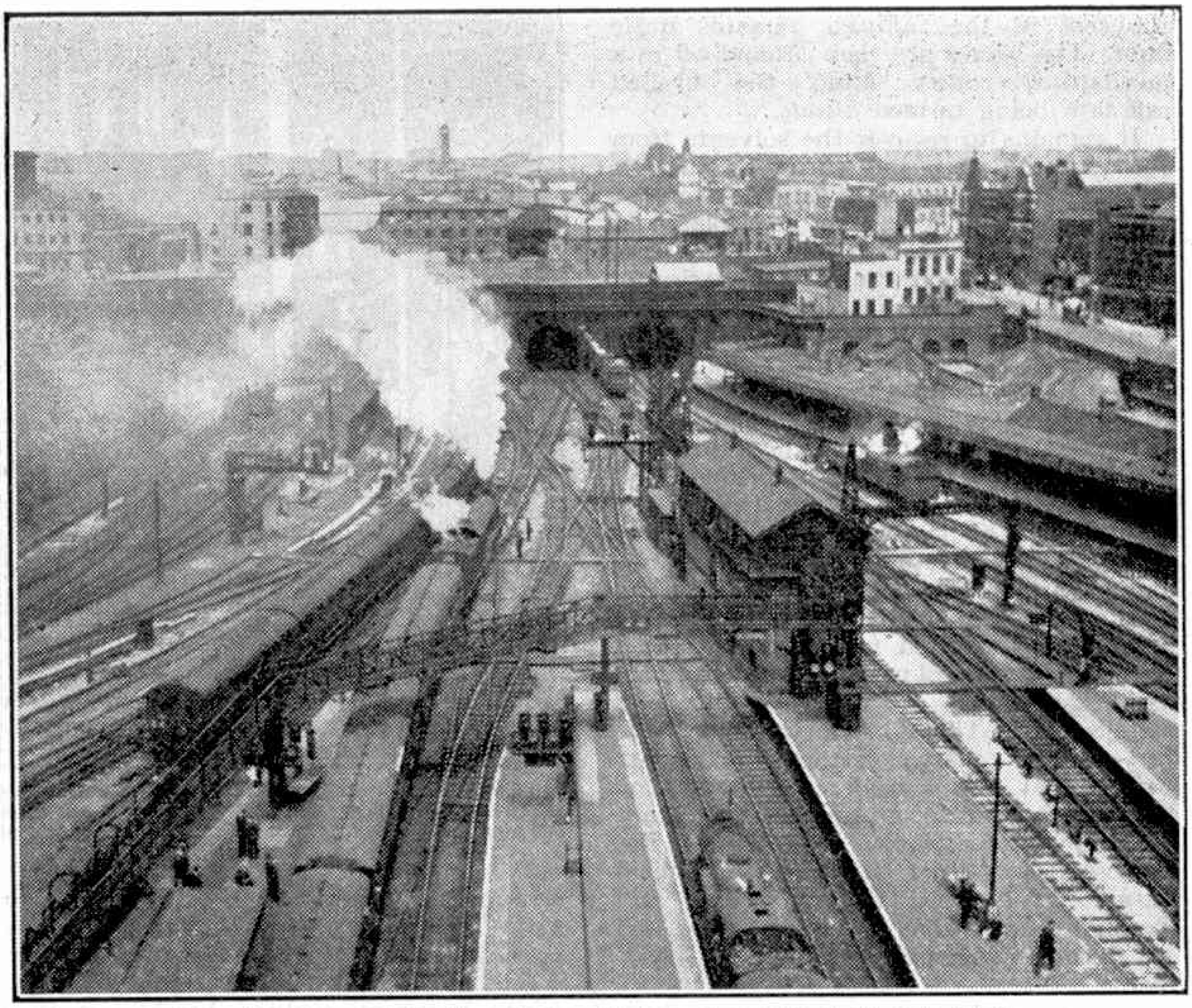
(ii) Transformer Oils

These are prepared from carefully selected lube fractions, which are solvent-extracted but do not require de-waxing. The oil is not acid treated, as acid treated transformer oils tend to oxidise and such oxidation ruins the electrical properties of the oil. In the first stages, it is treated as lubricating oil, being mixed with clay, passed through the tube still and vacuum tower, and filtered. No lime is needed as there is no acid content to be neutralised. The filtered oil is then "dehydrated" to remove the minutest traces of moisture.

(iii) White Oils

These are produced from lube 1 and lube 2 solvent-extracted distillates. The oil is first given four treatments with "oleum" in batch tanks termed "acid-agitators." Oleum is

(*Continued on page 104*)

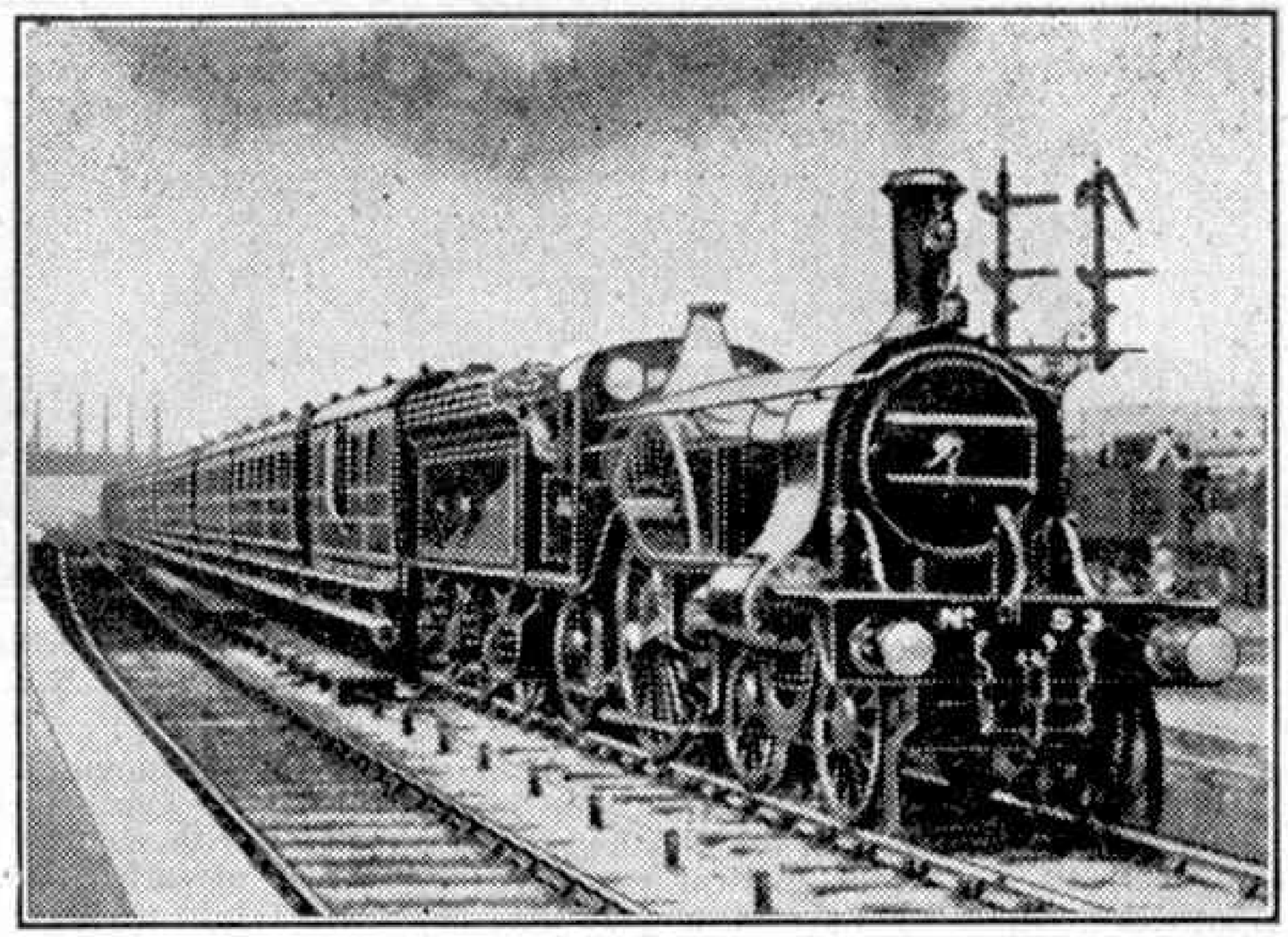


Departures from King's Cross to-day. Photograph by Roy E. Vincent, Ilford.

Centenary of the Great Northern Railway

ON 1st March, 100 years ago, there was opened the first section of the Great Northern Railway. In 1923 this line became an important constituent of the L.N.E.R. group, and it now forms part of the Eastern Region of British Railways.

The principal aim of the company on its formation in 1846 was to provide a direct trunk route between London and York. Actually the G.N.R. did not after all reach York over its own metals. It ended "*in a ploughed field four miles north of Doncaster*," to quote Edmund Denison, author of the London and York scheme and later Chairman of the Great Northern. There, at Askern Junction, it joined the Lancashire and Yorkshire, and over the lines of this and the York and North Midland, it got to York by way of Knottingley and Church Fenton. The opening of further sections followed and the main line down to Peterborough from a temporary London terminus came into use in 1850. Doncaster was then reached from Peterborough via Boston and Lincoln. In October 1852, King's Cross terminus, the Headquarters of the Great Northern Railway, was opened, the shorter route via Grantham and Retford having been brought into use just previously. It was nearly 20 years later that the present route, through Selby, replaced the Knottingley and Church Fenton line as the main link between Doncaster and York. That, however, was a North Eastern rather than a Great Northern development, the actual junction of the two systems being made at Shaftholme. But York was invariably regarded as the frontier station in working through traffic.



A G.N.R. express in Stirling days hauled by No. 53, one of the 4-2-2 "eight-footers." Illustrations on this page are by courtesy of the former L.N.E.R.

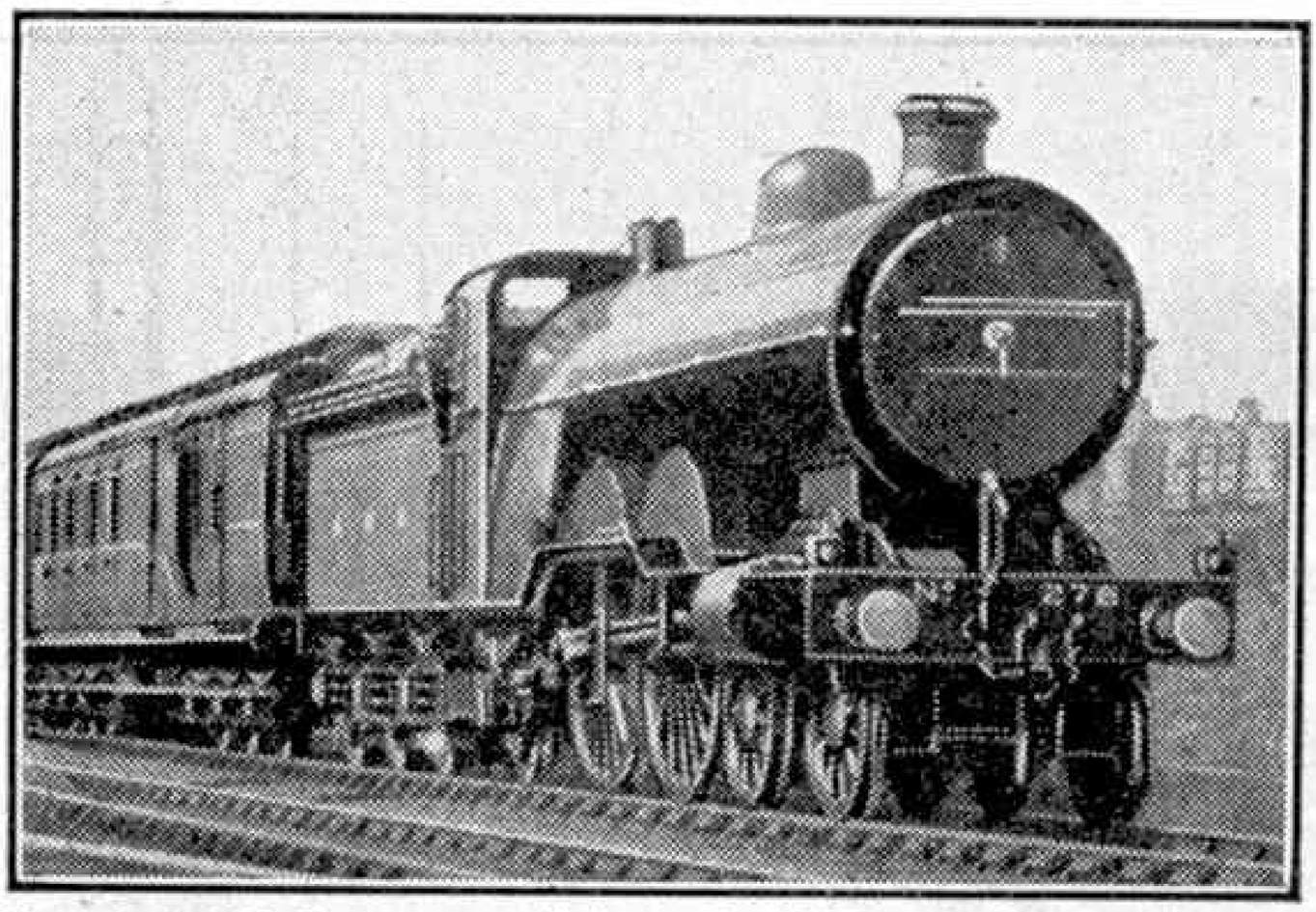
Apart from its share in the triple alliance then constituting the East Coast Route between London and Scotland, the Great Northern Railway had extensive interests in the West Riding of Yorkshire. Its trains reached Cambridge and and Nottingham and worked up to Harrogate; and they even managed to reach Stafford on the rival North Western line, but not over their own metals throughout. By means of running powers and working arrangements, G.N.R. served Manchester and, through its share in the Cheshire Lines system, it had interests in Lancashire and Cheshire. Its Joint Line with the former Great Eastern provided a route through March, Spalding and Lincoln; while by means of the Midland and Great Northern Joint Line it gradually reached well across to the East Anglian coast.

The main line was without severe curves or grades, although there were, and are, long stretches inclined at 1 in 200. For many years the Great Northern was noted for the speed of its trains. As early as 1850 the through Scottish services were begun, and in 1862 the historic 10 a.m. departure from King's Cross was instituted for the train long known as "*The Flying Scotsman*," although it did not actually carry this title in G.N.R. days.

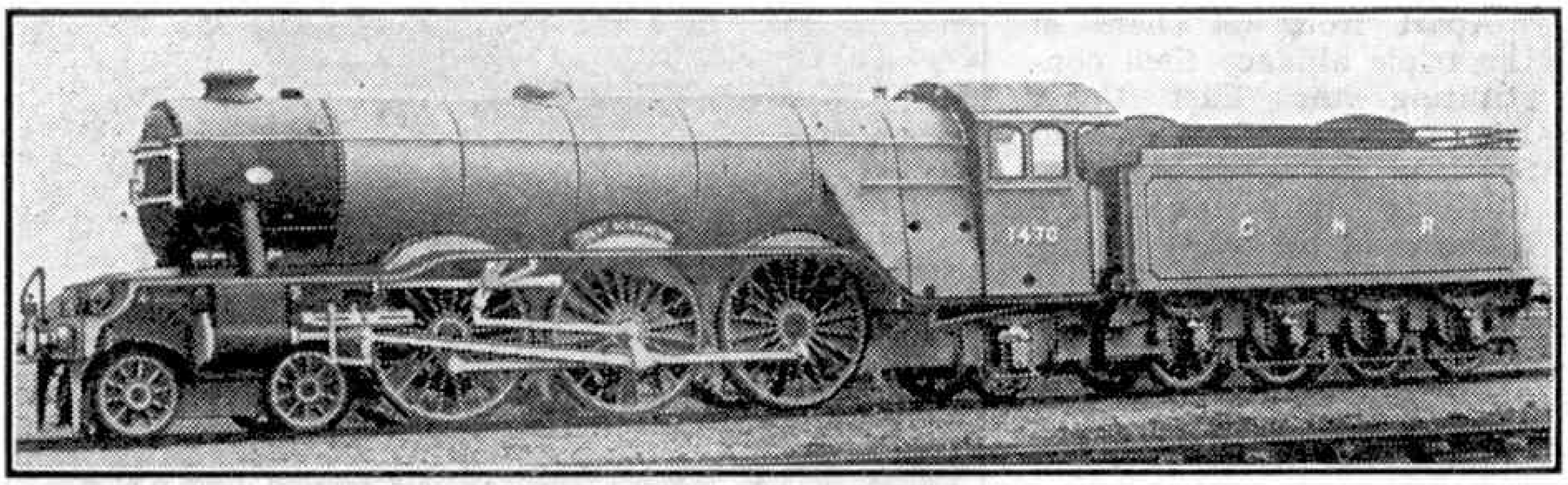
The through Scottish services came well into the limelight as the result of the now almost legendary "Races," to Edinburgh in 1888 and to Aberdeen in 1895, when the competing East Coast and West Coast companies fought remarkable speed duels.

In these contests the G.N.R. was working in conjunction with its northern partners in the East Coast Joint combine, the North Eastern and the North British Railways. Strangely enough it was its association with another company entirely, and in quite a different direction, that produced one of the most remarkable train services of its day. This company was the Manchester, Sheffield and Lincolnshire, with which the G.N.R. concluded a 50-year agreement in 1857. As a result there began a through train service between King's Cross and Manchester. This was routed via Retford and Sheffield. The best timing on the part of the G.N.R. and "the old Sheffield" was the 4 hr. 15 min. allowance that came into force in 1884, and held good for more than 14 years.

Naturally when "the Sheffield" became the Great Central and made its own route south to London, the joint Manchester service was affected. The G.N.R. had in fact opposed the Extension Bill of the Sheffield company, but ultimately withdrew its opposition in return for running powers north of Nottingham and west of Sheffield over the other company's lines. At the same time it gained



A typical G.N.R. express of the early 1900s. It is composed of twelve-wheeled stock and is hauled by a large-boilered "Atlantic" No. 278.



The first Gresley "Pacific" No. 1470, appropriately named "Great Northern." This appeared in 1922. Photograph by courtesy of the former L.N.E.R.

a half share of the new G.C.R. Nottingham station.

Subsequently the G.N. for some time maintained its own Manchester service, but this had to be pruned somewhat as the Great Central was also working Manchester traffic by its own new route. Even as late as 1910, however, there was a speedy G.N.R. service to Manchester provided by the 6.5 p.m. down. This reached Sheffield in the smart time of 3 hours, having covered the 105¼ miles down to Grantham at 56.4 m.p.h., which was the fastest booking to that town at the time. The corresponding up service then provided the second fastest start to stop run on the G.N.R., its 110 min. timing from Grantham involving an average of 57.4 m.p.h.

In more recent times the best purely G.N.R. main line trains were undoubtedly those on the Leeds and Bradford service. A noted train at one time was the 2.15 p.m. down which used to get to Doncaster at 56.7 m.p.h.; while the longest G.N.R. non-stop run in those days, the 175¾ miles from Wakefield to King's Cross were covered at 57 m.p.h. by the 2 p.m. "Special Express" from Leeds. These were fairly light trains, but even the heavier 10.10 a.m. from London used to run down to Peterborough at 55.8 m.p.h.

Apart from this good treatment in the matter of speed, the Leeds service had been selected as long ago as 1879 for the introduction of the first dining car seen in this country. This in fact was a Pullman car built in America and shipped over. It was very different from the cars subsequently built by the G.N.R. itself, but its introduction was a venture which succeeded. Many years later, in 1921, the Leeds service saw the remarkable five-car set articulated throughout with the first all-electric kitchen and dining car unit. This articulation principle — the union of adjacent vehicles over a single bogie — was a Great Northern speciality and had been introduced in 1907. It later became common for suburban trains which, thus equipped, provided better riding than the close-coupled sets of four-wheelers characteristic of Great Northern local trains for many years.

The Great Northern main line coaching stock went through the usual stages of development in the course of time. The rather severe-looking six-wheelers, with the sharply turning eaves to the otherwise somewhat flat roofs, lasted well and could be seen in East Coast formations even after the introduction of dining vehicles on these services in the early nineties, although bogie stock had already come to stay. Twelve-wheelers, long bogie cars of quite modern dimensions, were the fashion for a time, not only for dining and sleeping cars but also for norma corridor stock. On these a handsome clerestory with sloping ends was added to the rounded eaves of earlier stock. In later days eight-wheeled vehicles became the rule again, and the high curved roof with domed ends supplanted the clerestory.

Great Northern engines, like the coaches, followed a remarkably logical trend of development after the miscellaneous and experimental types of the first few years. During the long reign at Doncaster of Patrick Stirling, almost thirty years, the single-driver was the accepted type for express work, the best known class being the 4–2–2 "eight-footers." This too was the era of the domeless boiler and of extreme neatness and consistency of outline.

The Ivatt period, 1896—1911, was not a long one, but it saw remarkable changes. The dome returned and the 4–4–2 became the standard express type. The Ivatt "Atlantics" were the first of their type in this country, and the original small-boilered design of 1898 was followed up by the larger-boilered variety in 1902. These remained the standard express type for all but 20 years.

In the meantime the long Gresley regime, which continued into L.N.E.R. days until as recently as 1941, had begun. Specially notable were the large-boilered 2–6–0s of 1920 in which the three-cylinder principle was adopted after experiments with a 2–8–0. They did yeoman service with very heavy passenger trains during the emergency period of the 1921 coal strike. But these portly "Moguls" merely gave a hint of what was to follow in the first Gresley "Pacific" design embodied in No. 1470 *"Great Northern"* of 1922.

A heavy down train in charge of large 2-6-0 No. 1002. Note the typical G.N.R. "somersault" signals. Photograph by H. Gordon Tidey.

BOOKS TO READ

Here we review books of interest and of use to readers of the "M.M." With the exception of those issued by the Scientific and Children's Book Clubs, which are available only to members, and certain others that will be indicated, these should be ordered through a bookseller.

"THE EUSTON AND CREWE COMPANION"

By D. S. Barrie, M.B.E.
(The Oakwood Press. 4/6)

Mr. D. S. Barrie requires no introduction to readers of the "*M.M.*," to which he has contributed many fine articles and notes. He is particularly well qualified to present "*The Euston and Crewe Companion*," which is specially designed to be taken on the journey between these railway centres, whether it is made direct or via Birmingham, but railway enthusiasts also will find it invaluable in many an "armchair" journey.

This famous line is of the greatest interest, but one should know what to look for, and the "*Companion*" provides the necessary guidance. The London and Birmingham route was the first main line trunk railway. It was conceived, engineered and laid out on a grand scale from the start and it has been developed and equipped in the same generous manner over the course of years. The direct line to Crewe, avoiding Birmingham, is by way of the Trent Valley Line, now 100 years old, between Rugby and Stafford, where for the final stage the Birmingham and the Trent Valley lines combine.

Each stage of the route is taken in detail and many interesting facts of historical or present-day importance are given. In addition there are four extending sheets that provide a continuous track plan of the line, with mileage indications and gradient profiles, and these are so arranged that they can be scanned as the text is being followed. The account is very readable and is all the more interesting for the inclusion of two sections giving a brief summary of locomotive and coaching stock progress since London and Birmingham days. Some of the illustrations are modern, others are little-known and several are taken from old prints, but all are excellent.

Copies of the book can be obtained from The Oakwood Press, Tanglewood, South Godstone, Surrey, price 4/9 including postage.

"MOTOR SPORT RACING CAR REVIEW"

By D. S. Jenkinson (Grenville. 7/6)

The aim of this book is to set down as many facts and details as possible about representative racing cars of the periods immediately before and after the war. Only what may be called thoroughbred racing cars have been dealt with, to the exclusion of the converted sports car type. The descriptions are accompanied by full page photographs selected to show as much detail as possible.

The book gives a satisfying wealth of information on such cars as the Mercedes-Benz, Maserati, Alfa-Romeo, Auto-Union, Bugatti and other famous continental makes, while Great Britain is represented by three E.R.A. types, the Alta, the 1½-litre Fraser-Nash, the I.F.S. Riley, the M.G. "Midget" and the Austin. Famous races in which these particular cars were outstanding are outlined, and the result is a booklet that will be of absorbing interest to all motor car and motor racing enthusiasts.

"THE TRAINS WE LOVED"

By C. Hamilton Ellis
(George Allen and Unwin Ltd. 15/–)

The author of "*The Trains we Loved*" deals with railways of the period from about 1874 to 1914, when the train was supreme as a means of transport and steam as the motive power. He has not written a dry history or a matter-of-fact reference book; facts there are in plenty, but he writes attractively in "a sympathetic attempt to recall what the old British systems and their trains were really like."

A long time and many changes separate us from the era of which Mr. Ellis writes, when the "Midland" and "North Eastern," the "Caley" and many others with their resplendent engines and trains were household names, but he recreates admirably the railway atmosphere of bygone days for those not old enough to recall them, and for those who can he revives many memories. The earliest chapters deal first of all with characteristic journeys, followed by accounts of the old companies. Locomotive and carriage design and characteristics, the latter a pet subject of the author, are next considered, and then comes a thrilling and entertaining chapter on the railway racing days of old, first with East Coast and West Coast Routes competing fiercely for the Scottish traffic, and later with the Great Western and South Western in rivalry for liner traffic from Plymouth.

Interesting railway byways and oddities and useful locomotive details bring the book to an excellent conclusion. It is well illustrated and a great deal of period atmosphere has been worked into eight pictures in colour by the author himself.

"LOCOMOTIVES OF THE L.M.S." (2/6)
"LOCOMOTIVES OLD AND NEW" (2/6)
"L.M.S. LOCOMOTIVES IN COLOUR" (1/6)

Engine "spotters" and indeed all locomotive enthusiasts have good cause to thank the former L.M.S. for these products of its Publicity Department, which appeared during the last few days of the Company's existence.

The first of the three is a 312-page booklet of handy size giving lists of all L.M.S. named engines and a classified numerical list of L.M.S. locomotives. It has ruled spaces for the observer to record where and when each engine is seen and its home depot, and there is also an illustrated section reproducing photographs of every class of engine then running on the L.M.S., including lone survivors of ancient vintage, with dates and some dimensions. A booklet with a special appeal for spotters.

"*Locomotives Old and New*" presents views of some of the engines built by the L.M.S. and by its constituent companies, from the "Rocket" of 1829 to the recent diesel-electric giant No. 10000. Reproduction is very good and the page size allows of plenty of clear detail. Many of the well-known engines of the past are included, with brief particulars; modern standard classes also are shown and these are accompanied by dimensioned outline diagrams that add considerably to the value of the book.

The third of these productions takes the form of a set of six coloured postcards of engines. They feature L.M.S. engines of the "Coronation," rebuilt "Royal Scot," 4–6–0 Class 5 mixed traffic, 2–6–4 Tank Class 4, 2–8–0 Class 8 Freight and 2–6–0 Class 2 Freight types.

For the wealth of information included and for the quality of the productions generally, all of these represent astonishingly good value. They are obtainable from The Railway Executive, Regional Press Office, London Midland Region, Room 400, Euston House, Eversholt Street, London N.W.1.

"THE CAVE OF WINDS"

By C. Bernard Rutley (Warne. 6/– net)

A strange land in the Antarctic, where hot springs make life possible in the midst of snow and ice, is the home of descendants of men who were driven out of Tyre thousands of years ago. Into this land come Tom and Dick Standish, who have many astounding adventures, and make unbelievable discoveries before they return homeward in safety. A thrilling and unusual story.

Air News

By John W. R. Taylor

Radlett Finale

Versatility has always been the keynote of the British aircraft industry, and this quality was never more apparent than in the wide variety of aircraft types shown in the S.B.A.C. Display at Radlett last September. I have already described in the "*M.M.*" the new air liners, military aircraft and "utility" cargo-planes that were on show for the first time. This month I will conclude my Radlett notes with brief descriptions of some of the other interesting machines displayed there.

Portsmouth Aviation "Aerocar"

As its name implies, the "Aerocar" has been designed as the family car of the air. By adopting a high wing, twin-boomed layout, its designers have been able to provide a roomy, lightly-stressed cabin nacelle, with four large car-type doors and windows and a rear end that folds upward to facilitate loading of luggage or freight. The cabin can be entered without steps as its floor is only 23 in. above the ground, while the high wing ensures a good downward view during flight.

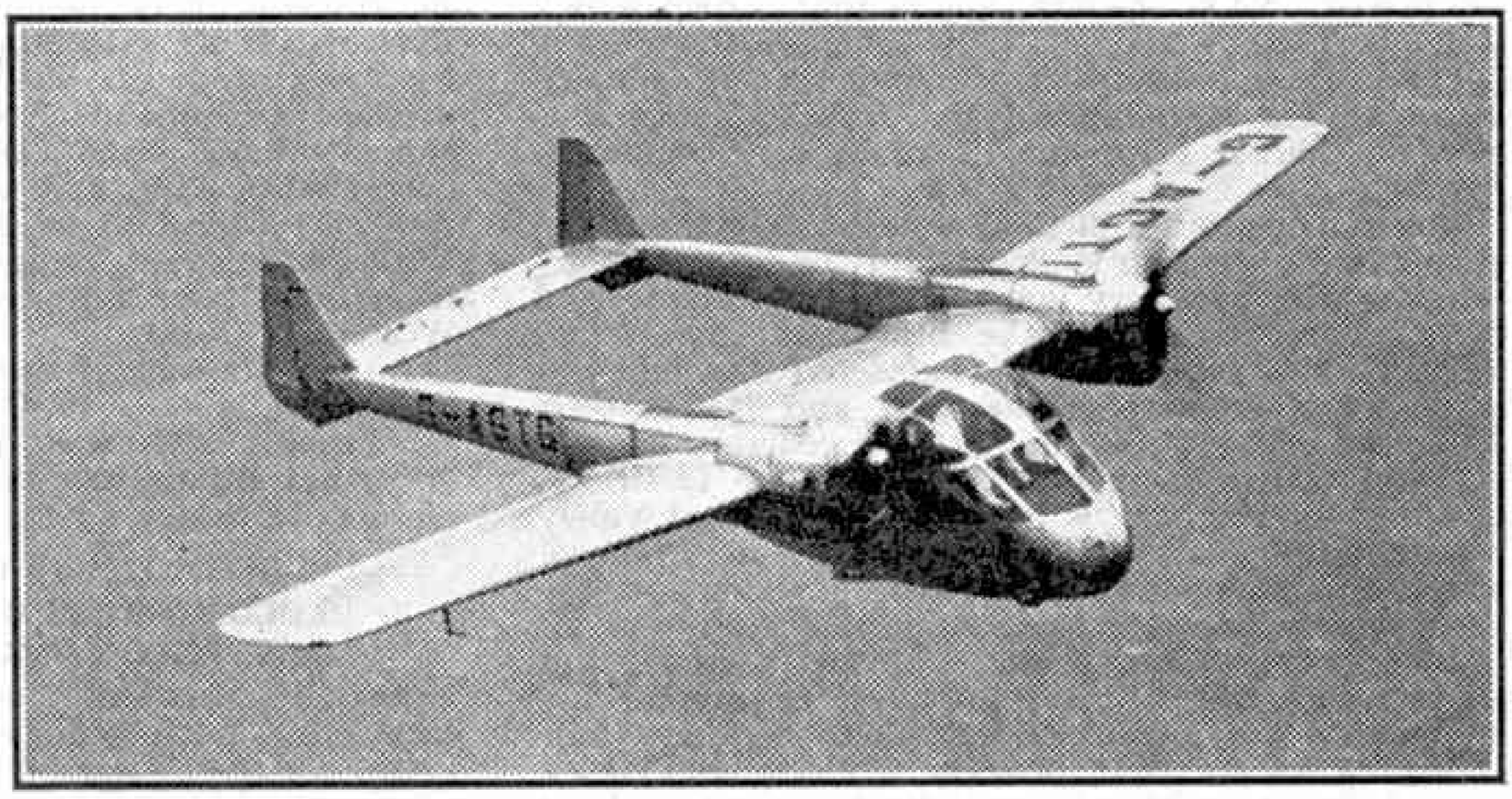
The "Aerocar" is versatile, its all-metal construction making it suitable for operation in any part of the world. With normal seating for five persons, it is available as a landplane with retractable tricycle undercarriage, a float seaplane or ski-plane. As an ambulance it will carry two stretcher cases with an attendant; as a freighter it will accommodate awkward loads ranging from a motor-cycle or pram to spare engines or crop-dusting equipment.

The prototype is powered by two 155 h.p. "Cirrus Major" engines and has a top speed of 164 m.p.h. The wing span is 42 ft.

Prestwick "Pioneer"

Another light 'plane that can be operated on wheels, floats or skiis is the Prestwick "Pioneer," similar in appearance to the old German Fieseler "Storch" and with the latter's ability to operate from small unprepared surfaces. It is a four-seat, all-metal high wing monoplane with a fixed undercarriage, and should prove ideal for ambulance work, aerial photography, crop-dusting, or as a mailplane to remote areas far from normal landing grounds; as well as for passenger and communications duties.

The "Pioneer" has a 240 h.p. "Gipsy Queen" engine, and a top speed of 126 m.p.h. Very extensive wing flaps and slots are fitted, which enable it to land at only 30 m.p.h. and to operate from an area no longer than a football pitch.

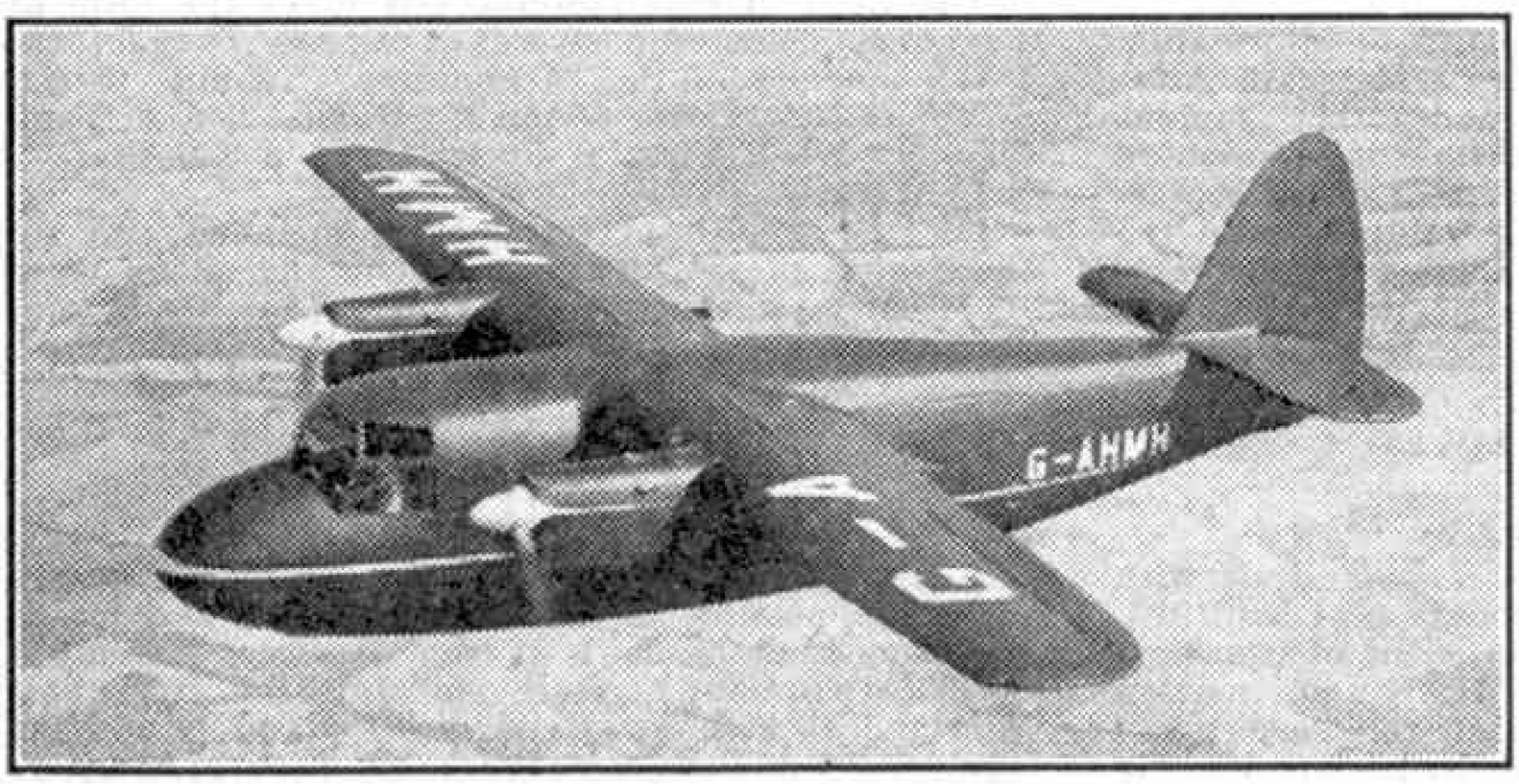


The Portsmouth Aviation "Aerocar," a new British twin-boom aircraft that seats five people. Photograph by courtesy of Portsmouth Aviation Ltd.

Percival "Merganser"

This is a twin-engined all-metal aircraft designed to afford an exceptionally high standard of comfort for six or eight passengers. The seats, the bulkhead between the luggage compartment and the main cabin, as well as the toilet compartment walls and fittings, are all held in position by pins and are easily removable. As a result the number of passenger seats and the volume of freight space can be quickly adjusted to meet changing requirements. Typical loads are five passengers and 300 lb. of luggage for 800 miles at 160 m.p.h., eight passengers and 200 lb. of luggage for 300 miles, or 1,350 lb. of freight for 800 miles. It is thus useful for feeder-line or charter work as well as for executive travel or private use.

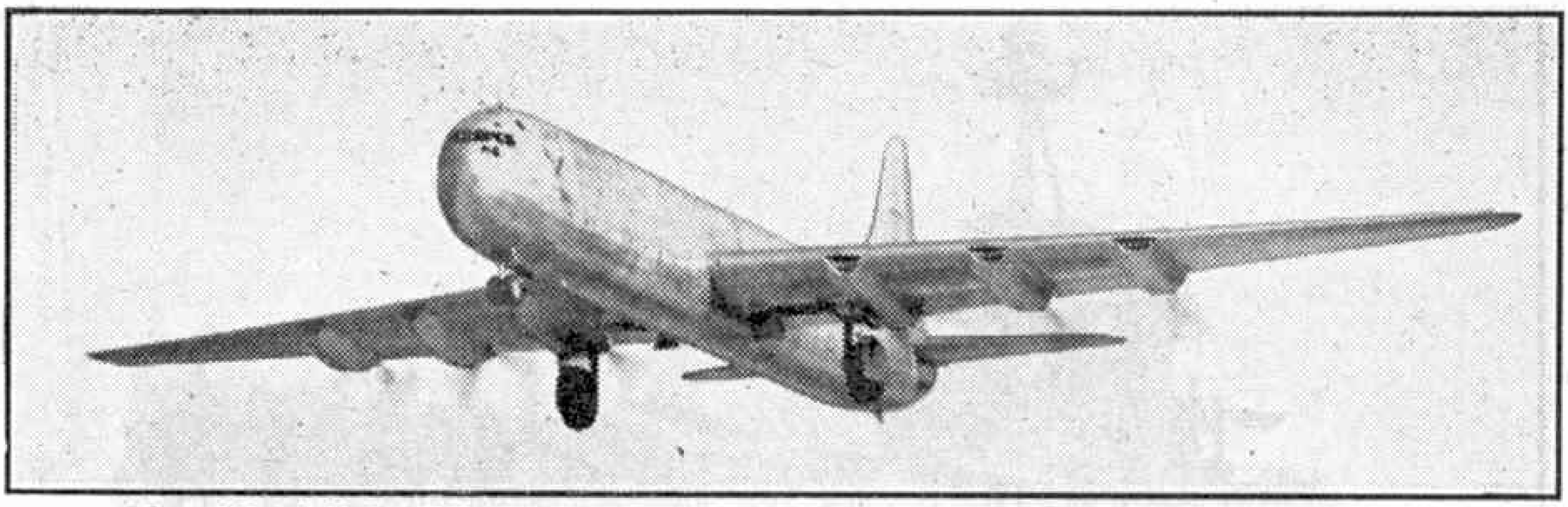
The "Merganser" is powered by two D.H. "Gipsy Queen" engines, which give it a top speed of 193 m.p.h. Unfortunately this engine is in such demand that it has proved impossible to obtain a steady enough supply to put the "Merganser" in production. But a direct development named the "Prince" is now being built and will go into production with "Leonides" engines. It is larger than the "Merganser," with accommodation for 10 passengers, and has a top speed of 227 m.p.h.



Percival "Merganser," a 5-8 passenger machine designed for feeder-line or air-taxi work.

* * * *

B.S.A.A. have purchased five Vickers "Viking" air liners for service in the Caribbean area, where they will replace the "Lodestars" hitherto used by West Indian Airways—recently taken over by B.S.A.A.



Consolidated Vultee XC-99 transport, the world's largest landplane, making its first flight.

World's Biggest Landplane

Sister-ship to the giant B-36 six-engined bomber, the Consolidated Vultee XC-99 transport aircraft illustrated on this page is the world's largest landplane. It is, in fact, very similar in size to the Bristol "Brabazon" air liner, now nearing completion in this country. The XC-99 uses many components of the B-36 including the complete wing assembly and horizontal tail surfaces; consequently, as Convair are building 100 B-36 bombers for the U.S.A.F. it would be a fairly simple matter to put the XC-99 in parallel production.

It has a wing span of 230 ft. and a loaded weight of nearly 120 tons; its ailerons and elevators are nearly as big as the wing of a wartime "Liberator" bomber. Adaptable as a troop, cargo or hospital transport, it can carry 400 fully-equipped soldiers, 300 stretcher patients and their attendants or over 40 tons of freight on its two decks. An idea of its usefulness can be gained from the fact that the largest American air transports used in the last war carried only 50 troops. The XC-99 has a top speed of more than 300 m.p.h. and a maximum range with reduced loads of 8,100 miles. Its wing tanks hold 21,116 gall. of fuel—enough to take a large motor car round the world 16 times.

"Ambassadors" for B.E.A.

British European Airways have ordered several "Ambassadors." They should be in service by 1951, and will supersede the "Vikings" at present operating on many of B.E.A's. European routes. A description of the "Ambassador," which is undoubtedly the finest and most advanced medium-range air liner in the world, was given in the December 1947 *"Air News."*

B.E.A. have cancelled their contract for the jet-engined "Viscount."

B.O.A.C. Bermuda Service Increased

B.O.A.C. have increased the frequency of their dollar-earning U.S.A.-Bermuda service to six round trips weekly, three from New York and three from Baltimore. These services will be operated by "Constellation" aircraft now based at Montreal, thus saving dollar expenditure on the present base at Baltimore. The services will not be affected when the Montreal base of B.O.A.C.'s North Atlantic Division is moved to Filton, near Bristol, as they will be operated as an extension of the trans-atlantic route.

Aeroplanes of Glass

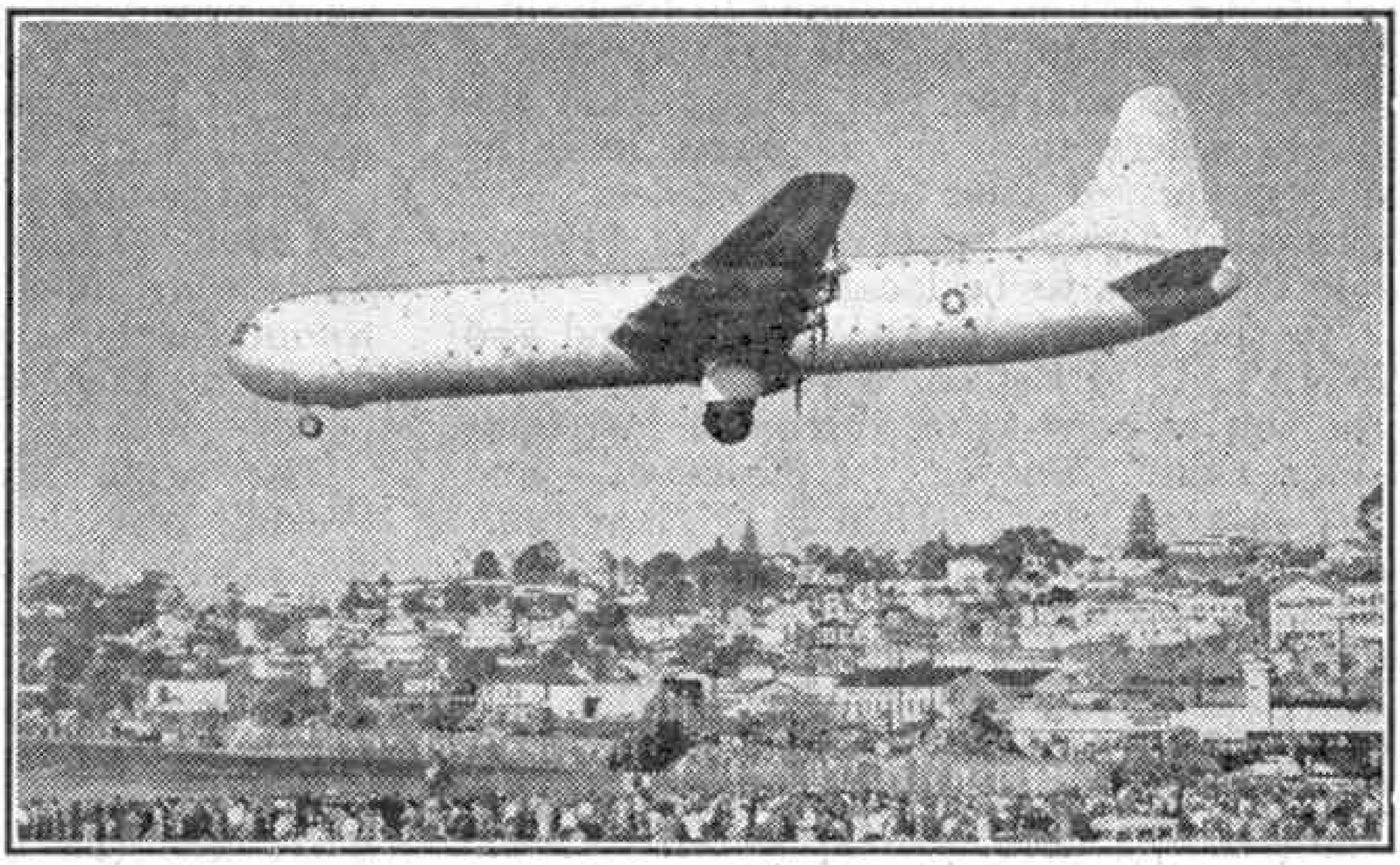
Research conducted by the Northrop Aircraft Company, of America, has proved the practicability of building certain large aircraft components from all-glass fabrics laminated with thermo-setting plastic resins. Although Northrops are not yet planning to build any airframes of this material, they state that parts laminated from alternate layers of resin-impregnated glass fabric fused together have shown extremely high strength factors. In fact there is no reason why an entire airframe should not be made of glass!

Advantages of this method of construction include simplified production methods, greater vibration dampening, greater strength/weight ratio in relation to stiffness and greater safety, since plastic structures do not retain dents and when punctured do not assume sharp edges.

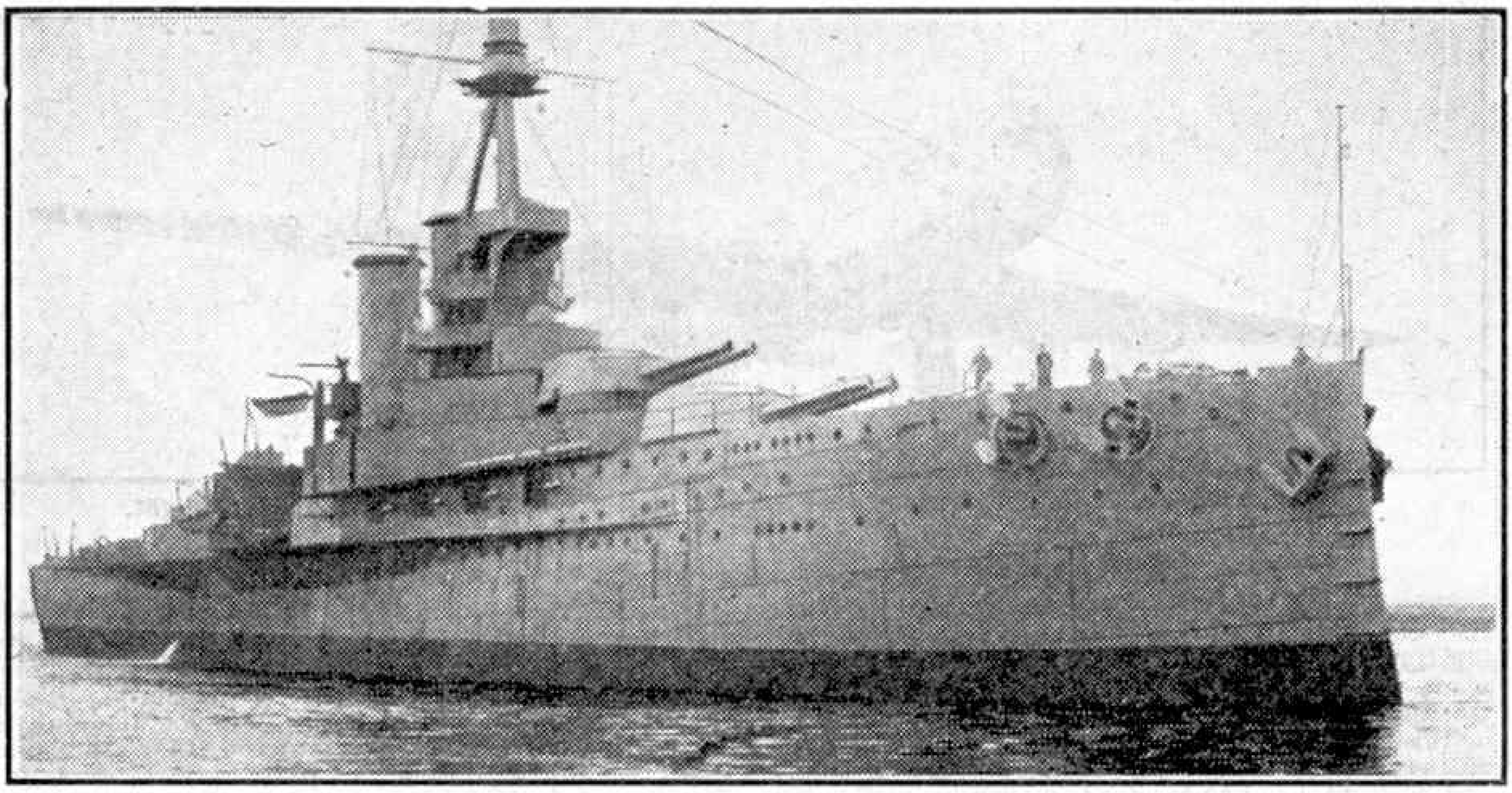
T.W.A. Buys 12 New "Constellations"

Trans-World Airline of America have purchased 12 new Lockheed "Constellation" air liners to meet increasing traffic requirements on their 23,267 miles of U.S. and overseas routes. Delivery has already started and the whole fleet should be in service by June, in time for the Summer travel peak.

These "Constellations" are of the new "Gold Plate" Type 749 variety, with luxurious seats that can be converted into 20 sleeping berths. They can carry full loads of passengers and cargo 3,600 miles non-stop at 272 m.p.h., with reserves for more than two hours extra flying if, through bad weather, they are unable to land at their scheduled destination.



The giant XC-99 arriving back at the airfield after the flight. Photographs on this page by courtesy of Consolidated Vultee Aircraft Corporation, U.S.A.



A close-up of a dummy battleship. Note the "gun barrels" and the false stem.

Dummy Warships

By Denis Rebbeck, M.A., M.Sc., B.Litt., M.I.N.A.

GREAT Britain made use of dummy warships in both World Wars and in so doing completely hoaxed the enemy as to the exact whereabouts of the real warships which the dummies represented. This is all the more remarkable in view of the fact that enemy air reconnaissance also was completely baffled by the deception, for although it is difficult enough to carry out this type of disguise on water-level, it is very much more difficult to fool the enemy from the air. There are obvious advantages in concealing the real position of capital ships, especially when there are too few to go to all the places where they are required, and the disposition of the enemy's fleet will naturally depend upon where he believes our big ships to be located.

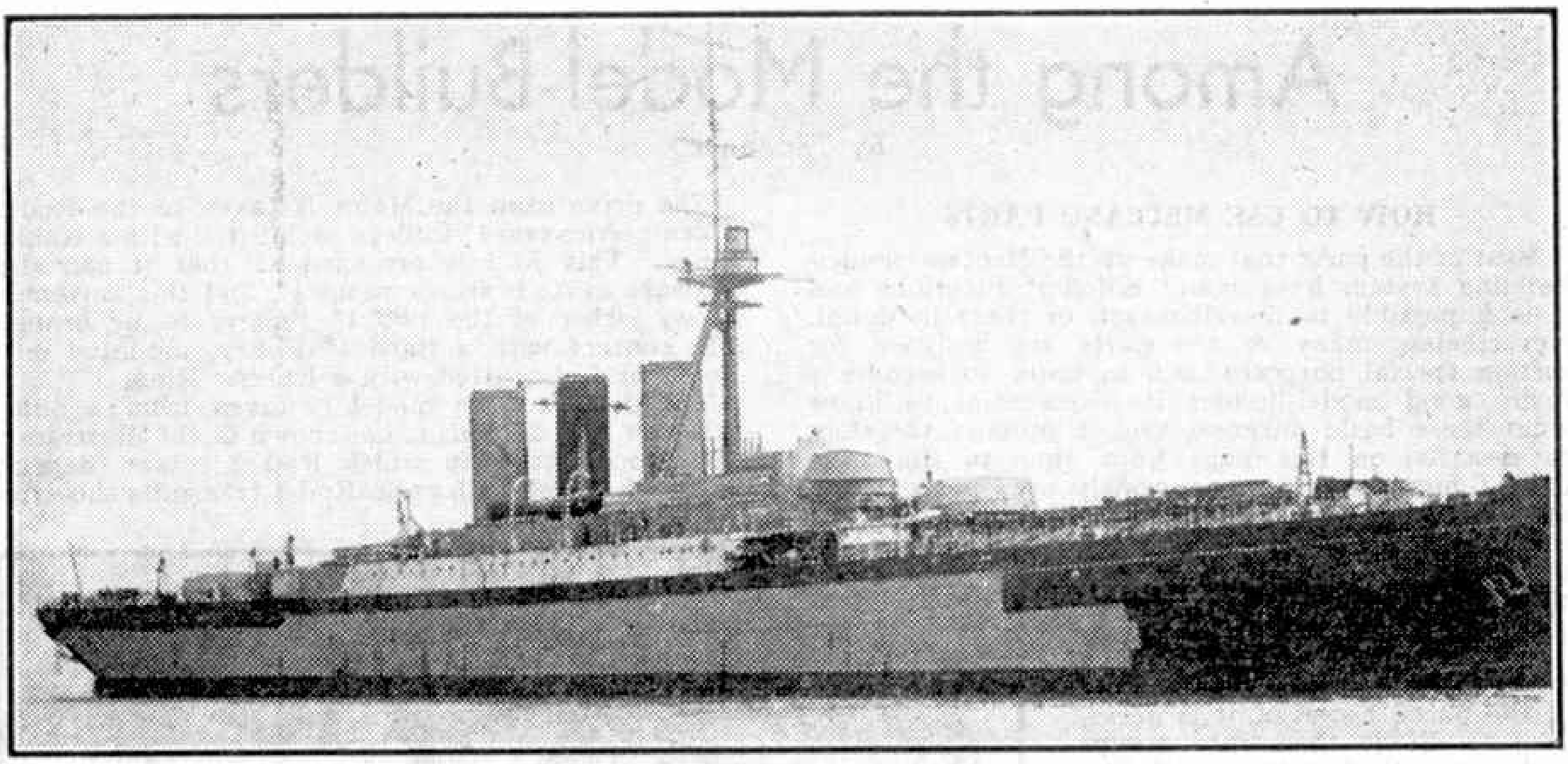
In the second World War, Harland and Wolff Ltd., of Belfast, were entrusted with the job of converting three old merchant ships, the *"Pakeha," "Waimana"* and *"Mamari"* into H.M.S. *"Revenge," "Resolution"* and *"Hermes"* respectively. The 33-year old H.M.S. *"Centurion,"* once a real battleship, and then used as a maintenance and repair ship as well as a target ship, became, by clever conversion, an imitation of the new battleship H.M.S. *"Anson."*

The three merchant ships arrived in Belfast in the early days of the war and the work of conversion was immediately put in hand. The vessels were fitted with elaborate superstructures of plywood and canvas and painted to look the part of the famous warships which they were to represent.

The mammoth gunbarrels could not do much shooting for they were made of wood, not unlike large telegraph poles, but the deception was clever and the effect very life-like. One shipyard worker expressed the hope that no Fleet Air Arm pilot would be so deceived from the air as to attempt to land on the dummy flight deck of the imitation *"Hermes"*—luckily no such hair-raising event ever took place!

The dummy battleships were manned by naval "runner" crews, and the ships' holds were filled with empty steel drums to increase the vessels' buoyancy in the event of their being hit by torpedo or bomb.

The same hoax was carried out in World War I when several merchant ships were similarly converted, and the accompanying illustrations show the good ship *"Merrion,"* first in the process of being converted, and then finally completed, as H.M.S. *"Tiger"* in 1915. In the first photograph the *"Merrion"* still looks quite like the merchant ship she really was, though the gun turrets in course of construction, the false deck forward, the



"Merrion" in course of conversion as H.M.S. "Tiger."

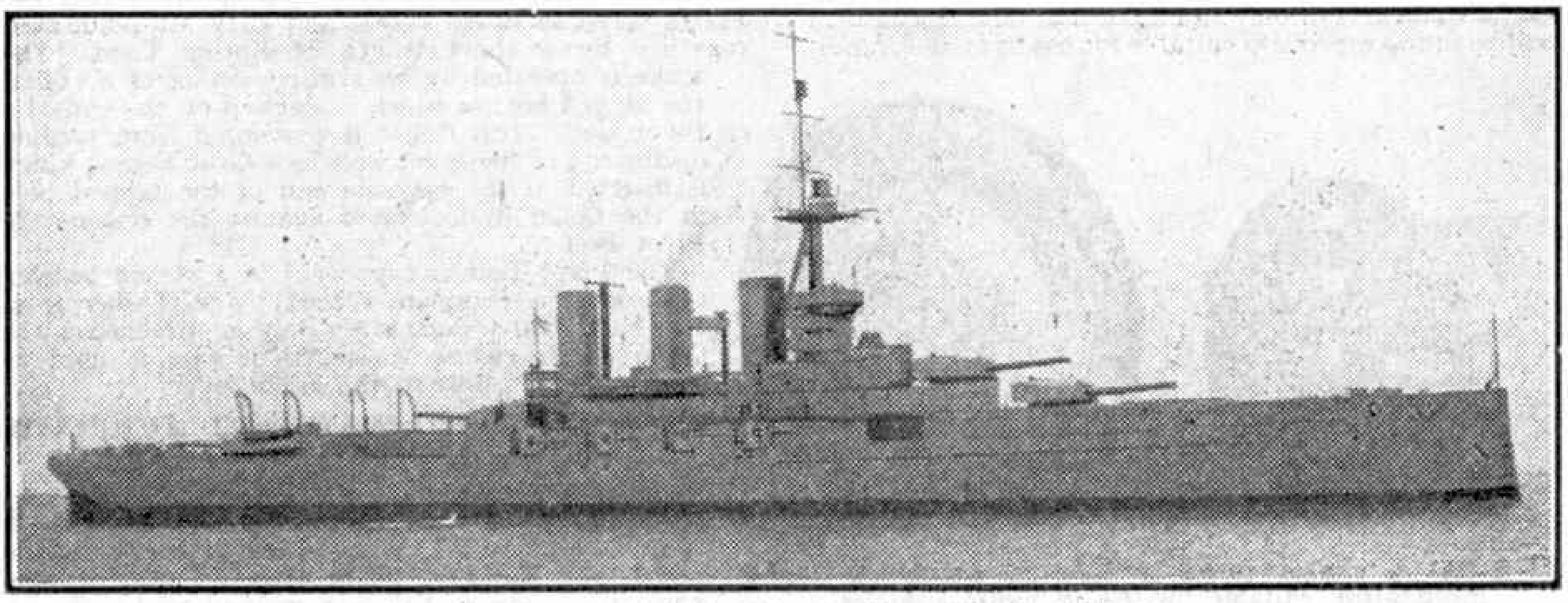
naval-type mast and other details will be noted. In the second illustration the metamorphosis is complete and it would take a very clever eye to discern what lies beneath the disguise—especially on a winter's day in the North Sea! As an example of the speed with which this kind of work is carried out it is only necessary to mention that a mere 11 days elapsed between the taking of the first photograph and the second one.

The transformed *"Centurion,"* skilfully disguised with a wooden superstructure and dummy guns to resemble the *"Anson,"* was photographed by spies. The Japanese were thus persuaded, in 1942, that one of the new battleships of the "King George V" Class had joined the East Indies Fleet, and this very valuable delusion, assisted by the fact that enemy agents had failed to identify the vessel exactly, helped the Allies considerably at that time of crisis.

The remaining "battleships" and "carrier" were highly successful decoys because they too deceived the enemy as to the whereabouts of our capital ships, and repaid in full measure the money and time which had been spent on their conversion at a time when shipyard "man hours" could not be wasted on any unimportant work.

The *"Pakeha"* and *"Waimana"* were, in due course and after they had served a very useful purpose, handed back to their owners to take up their old jobs as merchant ships. The *"Mamari"* (*"Hermes"*) was unfortunately wrecked off the Wash, and the grand old *"Centurion"* was sunk as a blockship in the Mulberry Harbour off the Normandy coast for the invasion on "D" day.

Belfast shipyard workers proved that they could keep a secret, and will long remember the warships which they turned out in a matter of weeks and which hoaxed a clever enemy.



The disguise completed. "Merrion" as H.M.S. "Tiger."

Among the Model-Builders

By "Spanner"

HOW TO USE MECCANO PARTS

Most of the parts that make up the Meccano model-building system have many different functions and it is impossible to describe each of these in detail. Nevertheless many of the parts are designed for certain special purposes, and in order to become a really good model-builder it is essential to know what these basic purposes are. I propose therefore to describe on this page from time to time, the main functions of the most widely used parts in the system, as I believe that by doing so I shall be helping younger model-builders especially to obtain the utmost possible fun and pleasure from their hobby.

Before any attempt can be made to describe the various uses of the parts, however, it is necessary to divide them into groups and to classify them in a systematic manner. For example, most of the parts fall easily into one of two general groups, which I will call the *Structural* and the *Mechanical* group.

The Structural group includes Strips, Angle Girders, Brackets, Trunnions and such-like parts, which are used principally for the construction of the framework of models, while the Mechanical section comprises Rods, Gears, Couplings, Pulleys, etc., which are used chiefly in building up operating mechanisms. The parts in the Structural section may be said to form the back-bone of the Meccano system, as they appear in practically every model.

Although it will not be possible to include all the Meccano parts in this series of short notes, I shall, starting next month, deal with some parts in each issue, and I advise all young model-builders and those just commencing the hobby not to miss any of the series.

SIMPLE REVERSING MECHANISM

Sometimes a reversing drive is required even on the smallest motor-driven model, and when a non-reversing motor such as the *Magic* type is used, this can be arranged quite simply on the lines shown in Fig. 1. A great advantage of this simple mechanism is that no gears are required, so that it is particularly useful to owners of only small Outfits. The mechanism will be found especially suitable for use in model cranes.

The drive from the Motor is taken to the Rod 1, which carries two 1" Pulleys each fitted with a Rubber Ring. This Rod is arranged so that it can slide endways in its bearings about $\frac{1}{2}$", and this movement allows either of the two 1" Pulleys to be brought into contact with a third 1" Pulley, mounted on a Rod 2 and also fitted with a Rubber Ring.

The drive to the model is taken from a pulley fitted on Rod 2. This is not shown in the illustration, and the direction in which Rod 2 rotates depends on which of the Pulleys on Rod 1 transmits the drive.

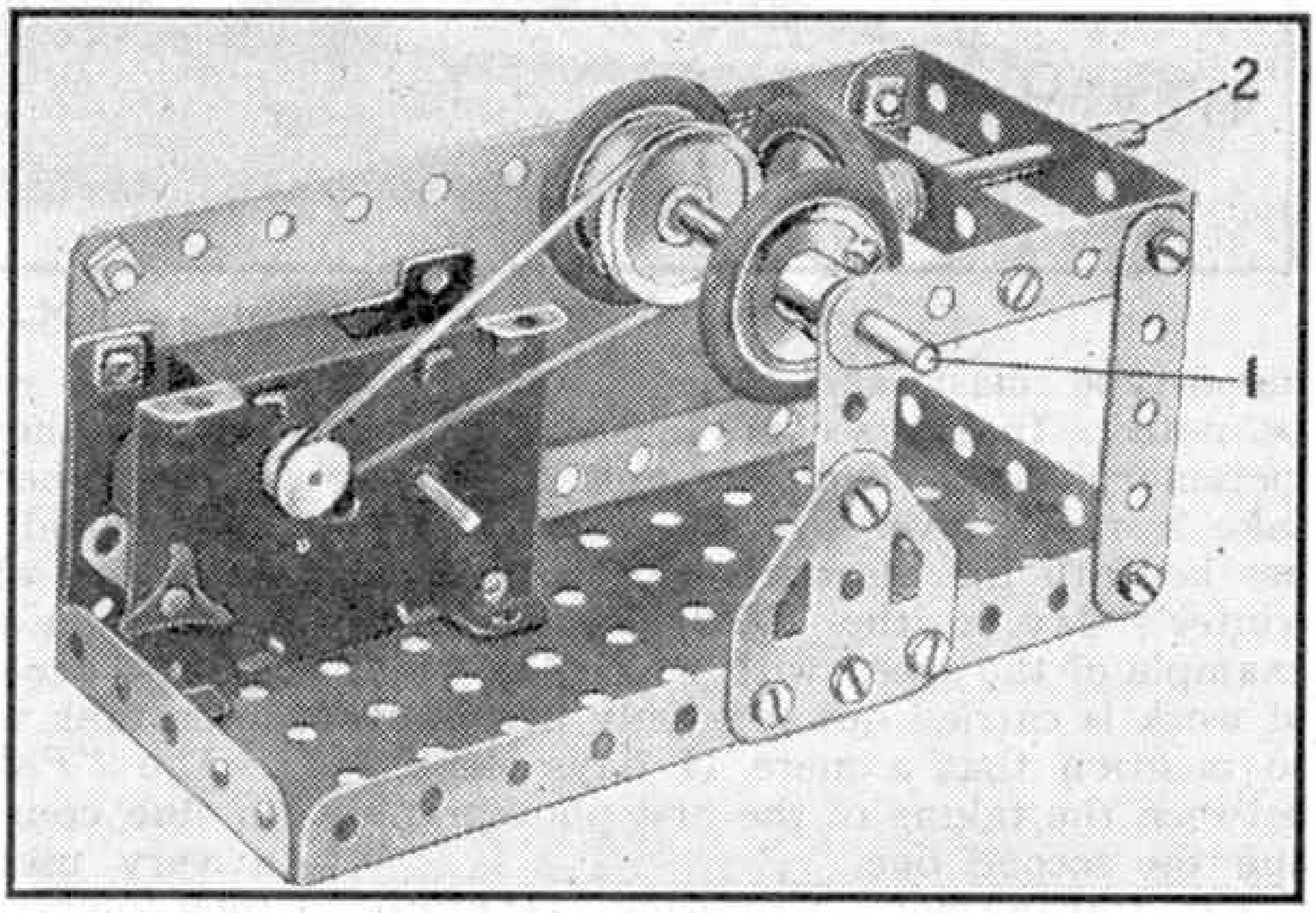


Fig. 1. The mechanism shown here provides a simple method of reversing the drive of a Magic Motor. No gears are used in its construction.

Rod 2 is journalled at right angles to Rod 1.

A USEFUL BRAKE FOR MOTOR VEHICLES

The brake mechanism shown in Fig. 2 is designed for use in motor vehicles, and is based on what is known as the internal expanding brake used in many actual cars and lorries. From the illustration it will be seen that two 1" Triangular Plates are attached pivotally to a Face Plate. These are mounted pivotally on lock-nutted $\frac{3}{8}$" Bolts, and their positions must be as indicated in the illustration. A Washer is placed on each Bolt for spacing purposes.

Two $\frac{3}{8}$" Bolts fixed by lock-nuts to the Triangular Plates serve as brake shoes, and they are connected together by a short length of Spring Cord. The brake is operated by an arm consisting of a Collar, the tapped hole of which is screwed on the end of a Pivot Bolt. This Collar is prevented from turning on the end of the Pivot Bolt by a Grub Screw, which is inserted in the opposite end of the tapped hole in the Collar and screwed against the end of the Pivot Bolt.

The Pivot Bolt is supported in a strong bearing comprising a Fishplate spaced by a Washer from the Face Plate, and a $\frac{3}{4}$" Bolt is attached by a Collar to its shank. A length of wire is used to connect the $\frac{3}{4}$" Bolt to the brake lever.

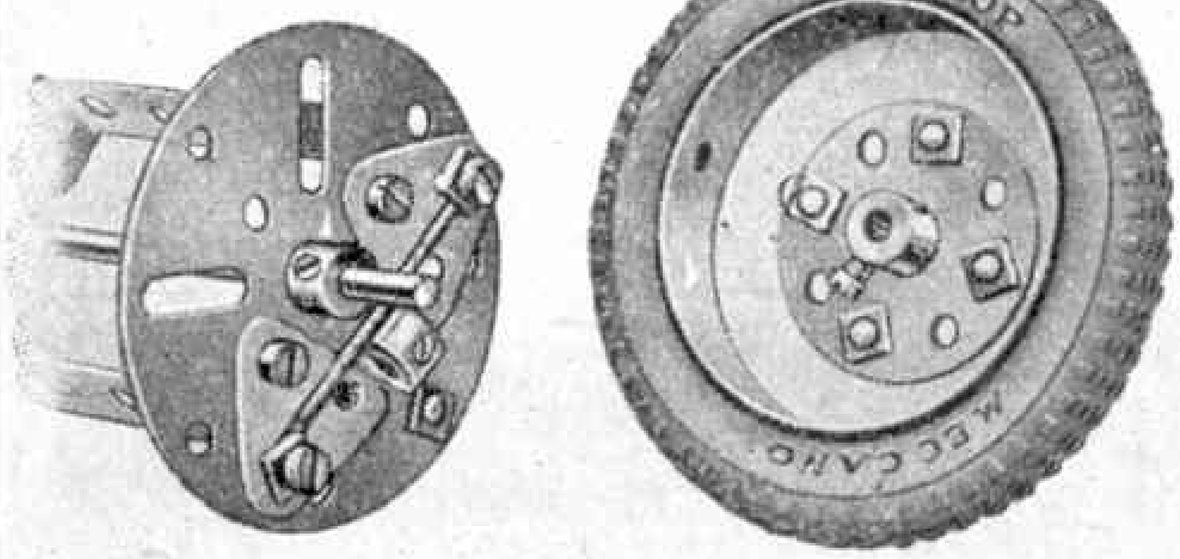


Fig. 2. A simple form of internal expanding brake mechanism, suitable for use in motor vehicles.

GRAB FOR MODEL CRANES AND AUTOMATIC HOISTS

The addition of a grab to models of cranes and other hoisting devices, in place of the usual hook and pulley block, adds a great deal of interest to the model, and I receive many enquiries from readers who wish to know the best method of building a

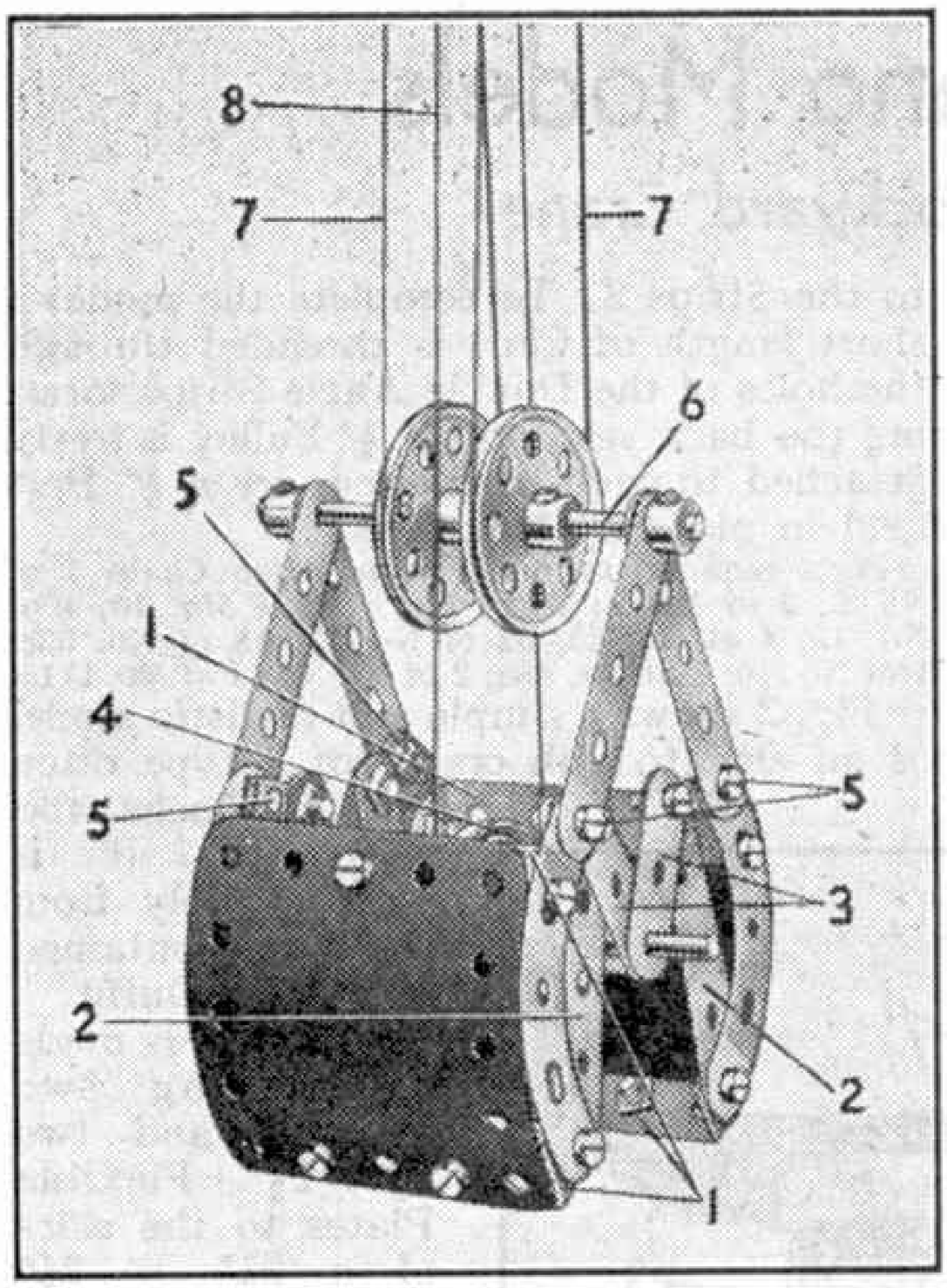


Fig. 3. This working grab forms an interesting accessory for use with model cranes.

suitable grab. This month I am describing a particularly neat and efficient grab that can be used for lifting material such as small pebbles, etc. The device is shown in Fig. 3.

The jaws are formed by Curved Strips bolted to each side of 2½" × ½" Double Angle Strips 1, and a 1 11/16" radius Curved Plate is attached to the Double Angle Strips. The 2½" Strips 2 on each side of the grab are fixed to the lower pair of Double Angle Strips, and 1½" Strips 3 are bolted to the end holes of the Strips 2 as shown. A 3½" Rod is passed through the end holes of the Strips 3. This Rod is weighted with two Worm Wheels, and carries a 1½" Pulley 4. Four 2½" Strips are pivoted by lock-nutted bolts 5 to the Curved Strips, and a 3½" Rod 6 is passed through their end holes and held in place by Collars. This Rod is fitted with two 1½" Pulleys.

Two separate lengths of Cord are used for hoisting the grab, and it is important to make sure that these are of exactly the same length. These Cords are marked 7 in the illustration, and they are fastened at one end to the jib head. They are then passed around the 1½" Pulleys on Rod 6 and over two similar pulleys in the jib, and are finally tied to a winding shaft in the cab of the model.

The jaws can be opened and closed by the Cord 8. This is tied to the jib head and is passed around the Pulley 4. It is then led over a Pulley in the jib and is fastened to a winding shaft in the cab. In order to raise or lower the grab, Cords 7 and 8 must be wound at the same rate. The jaws are opened or closed by operating Cord 8 independently of Cords 7.

A SPANISH READER'S PRINTING MACHINE

Alberto Enrique de Balle Perera, Barcelona, has been busy model-building, and one of his models is the automatic printing machine that is illustrated on this page. A reconstruction of this model was built for entry in a local competition, where it was awarded First Prize. Among its many interesting features are automatic inking and paper feed, and an electrical relay device for stopping the drive when the paper supply runs out.

The reconstructed model is rather more elaborate and neater in construction, but unfortunately the photographs in my possession are not suitable for reproduction.

Prizes for Meccano Models

Model-builders should not miss the opportunity of winning the fine prizes we are offering in the February General Model-Building Competition, which was first announced in the February "*M.M.*" All that is necessary to take part in the contest is to build a Meccano model. This may be of any type, and every reader is eligible to compete in the contest no matter what his or her age may be. Any size of Outfit may be used in building a model, but good workmanship and constructional details that show ingenious uses for Meccano parts will attract the attention of the judges far more than the mere size of a model.

After the model is built the next job is to obtain a suitable illustration of it. This should be a photograph preferably, but a sketch will do quite well. The competitor must write his age, name, and address on the back of the illustration and enclose it, together with a brief description of the model, in an envelope addressed "*February General Model-Building Contest, Meccano Ltd., Binns Road, Liverpool 13.*"

Entries will be grouped into two Sections, one for competitors living in the British Isles and the other for Overseas competitors. Entries from competitors in the British Isles may be sent in at any time up to March 31st. Entries from readers living Overseas will be accepted until 30th June.

The following prizes will be awarded in each Section for the best built and most interesting models received. First, Cheque for £2/2/–; 2nd, Cheque for £1/1/–; 3rd, P.O. for 10/6. There will be also five consolation prizes of 5/– each for entries of merit that do not gain a major award, and Certificates of Merit. All prize-winners will be notified by letter.

It should be noted that successful entries become the property of Meccano Ltd., but photographs or sketches of unsuccessful models will be returned to senders provided that a stamped addressed envelope of the necessary size is enclosed with the entry for that purpose.

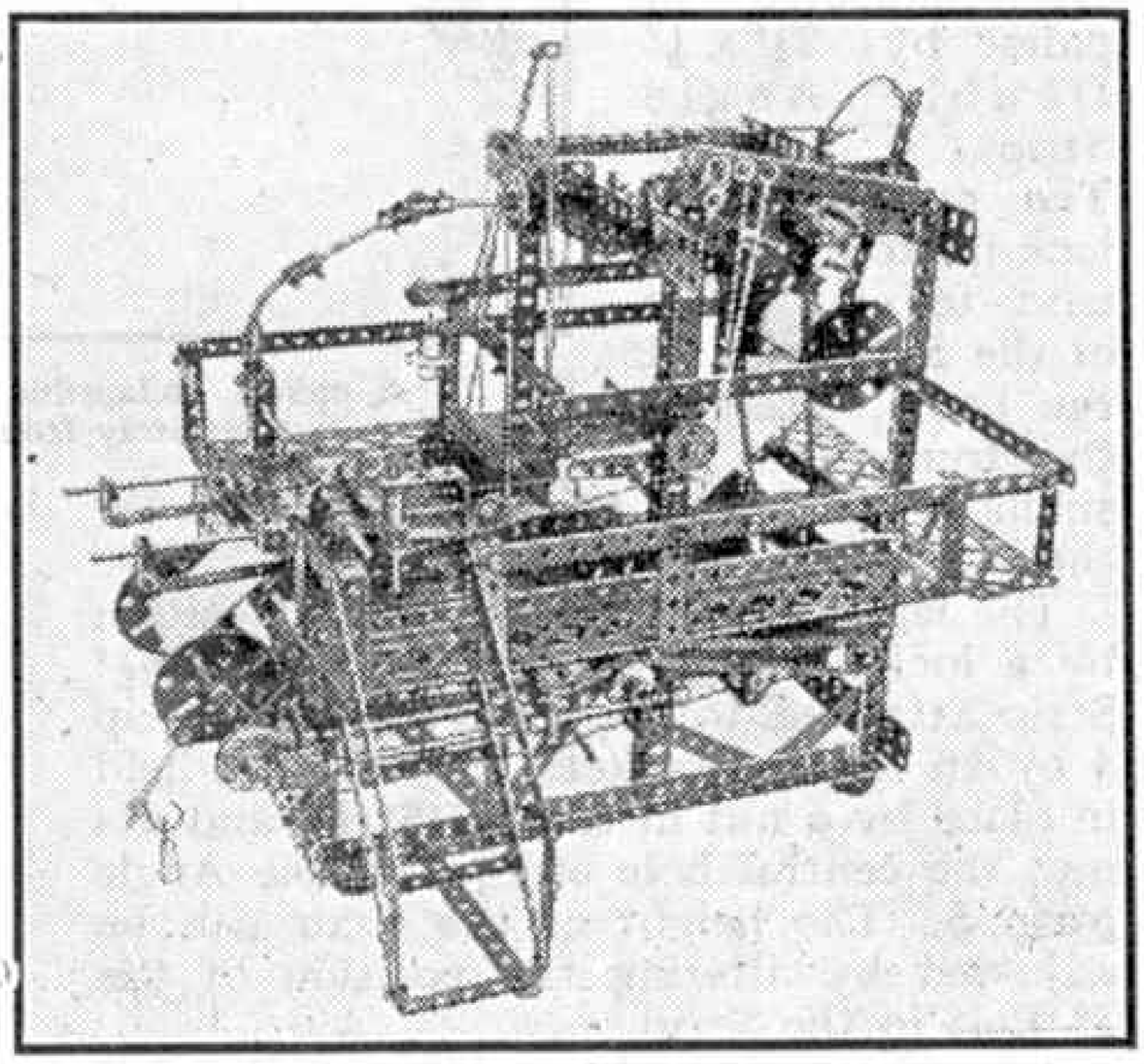


Fig. 4. An interesting printing machine built in Meccano by Alberto Enrique de Balle Perera, Barcelona.

New Meccano Models

Child's Chair—Dockyard Crane

HOUSEHOLD furniture can be made the subject of many interesting models, and the child's high chair shown in Fig. 1 is a particularly good example of models of this type. Although comparatively few parts are used in its construction a surprisingly realistic effect is obtained.

The back rest is made by joining together two 5½" Strips by two 2½" × ½" Double Angle Strips. The 2½" Strips 1 are bolted to the back rest and are extended by further 2½" Strips, which are connected by a 2½" × ½" Double Angle Strip and support a 2½" × 1½" Flanged Plate representing the table. The seat consists of a second 2½" × 1½" Flanged Plate, and is attached to a 2½" Strip 2 on each side of the model. The Strips 1 and 2 are connected by 3" Strips 3.

The legs are formed by 5½" Strips strengthened by 2½" Strips, and are connected in pairs by 2½" × ½" Double Angle Strips 4 and 5. The rear legs are lock-nutted in the next-to-end holes of the 5½" Strips of the back rest, and the front legs are similarly attached to the end holes of the Strips 3.

The legs are held in an upright position by a locking bar. This consists of a 5½" Strip attached to the Double Angle Strip 4 by an Angle Bracket. A ½" Bolt is held in place by a nut in the 5½" Strip, and fits into the central hole of the Double Angle Strip 5. The height of the chair can be adjusted by altering the position of the ½" Bolt in the Strip.

The foot-rest is formed by a 2½" × ½" Double Angle Strip attached by Fishplates to the Strips 3. To complete the model a short length of Cord is threaded through the holes of the Double Angle Strips forming the back rest, and a ½" Pulley is freely attached to each of the legs by a ½" Bolt held in place by lock-nuts.

Parts required to build model High Chair: 7 of No. 2; 2 of No. 4; 16 of No. 5; 2 of No. 10; 1 of No. 12; 4 of No. 23; 32 of No. 37; 18 of No. 37a; 1 of No. 40; 7 of No. 48a; 2 of No. 51; 9 of No. 111a.

Fig. 2 shows a simple and realistic model of an elevated jib crane, of a type often seen in docks and shipyards. It is built entirely from the parts contained in a No. 3 Outfit.

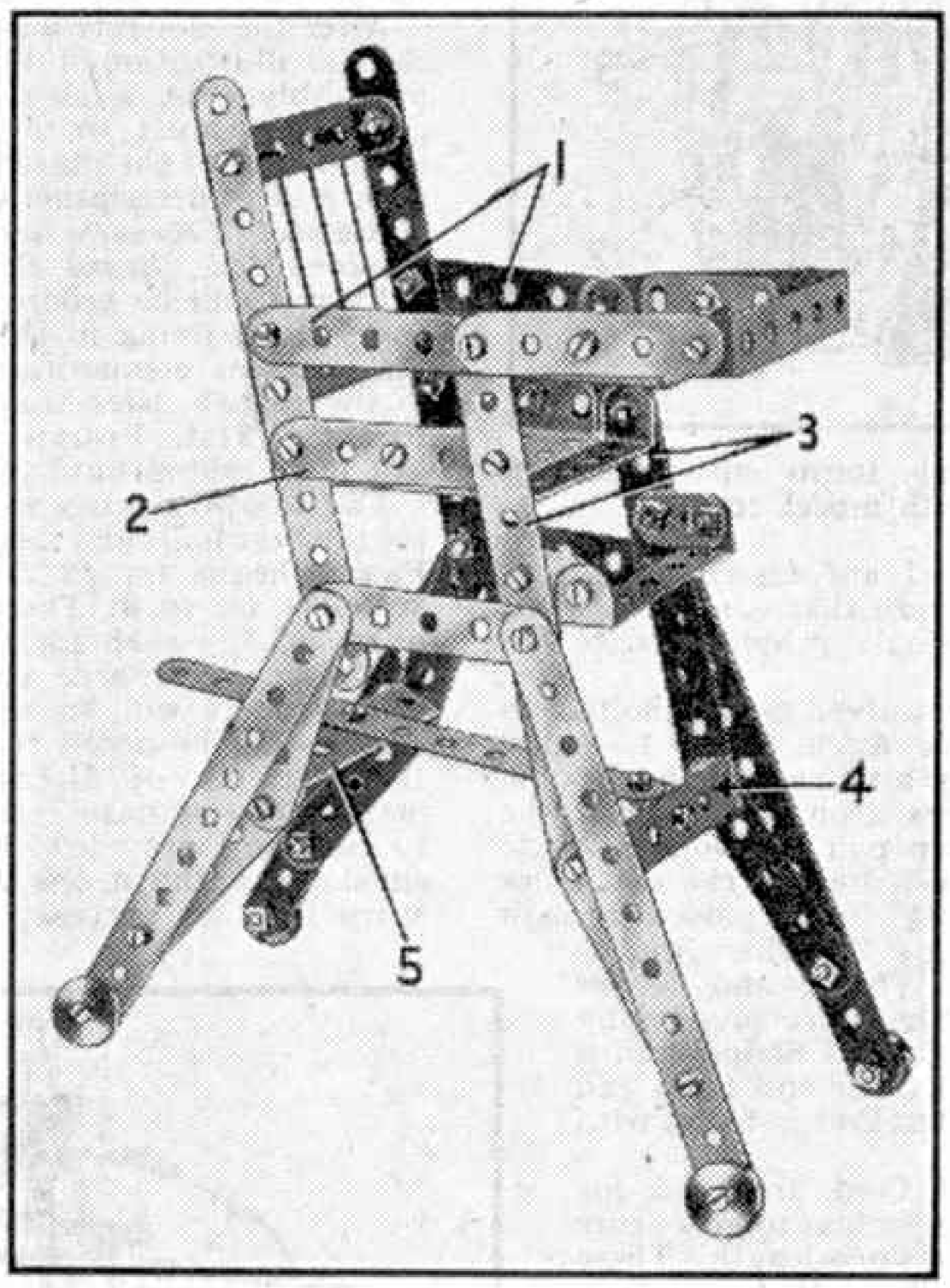


Fig. 1. A child's collapsible high chair, built almost entirely from Strips.

The base is made by bolting two 5½" × 2½" and two 2½" × 2½" Flexible Plates to the sides of a 5½" × 2½" Flanged Plate. The Flexible Plates are connected at their lower edges by two Angle Brackets and two Double Brackets.

The vertical tower consists of four 5½" Strips bolted to the base and attached at their upper ends to two Trunnions 1. The Trunnions are held together by a ⅜" Bolt, and the tower is braced by Cord passed through the 5½" Strips.

The sides of the cab are formed by 4½" × 2½" Flexible Plates strengthened by 5½" Strips 2. They are connected by two 2½" × ½" Double Angle Strips, one of which is held by a Bolt 3 and the other by a Bolt 4 on each side of the model. The ⅜" Bolt holding together the Trunnions 1 is passed through the centre hole of the Double Angle Strip held by the Bolt 4, and is fitted with lock-nuts so that the cab is free to rotate.

The back of the cab consists of a 2½" × 2½" Flexible Plate attached to the

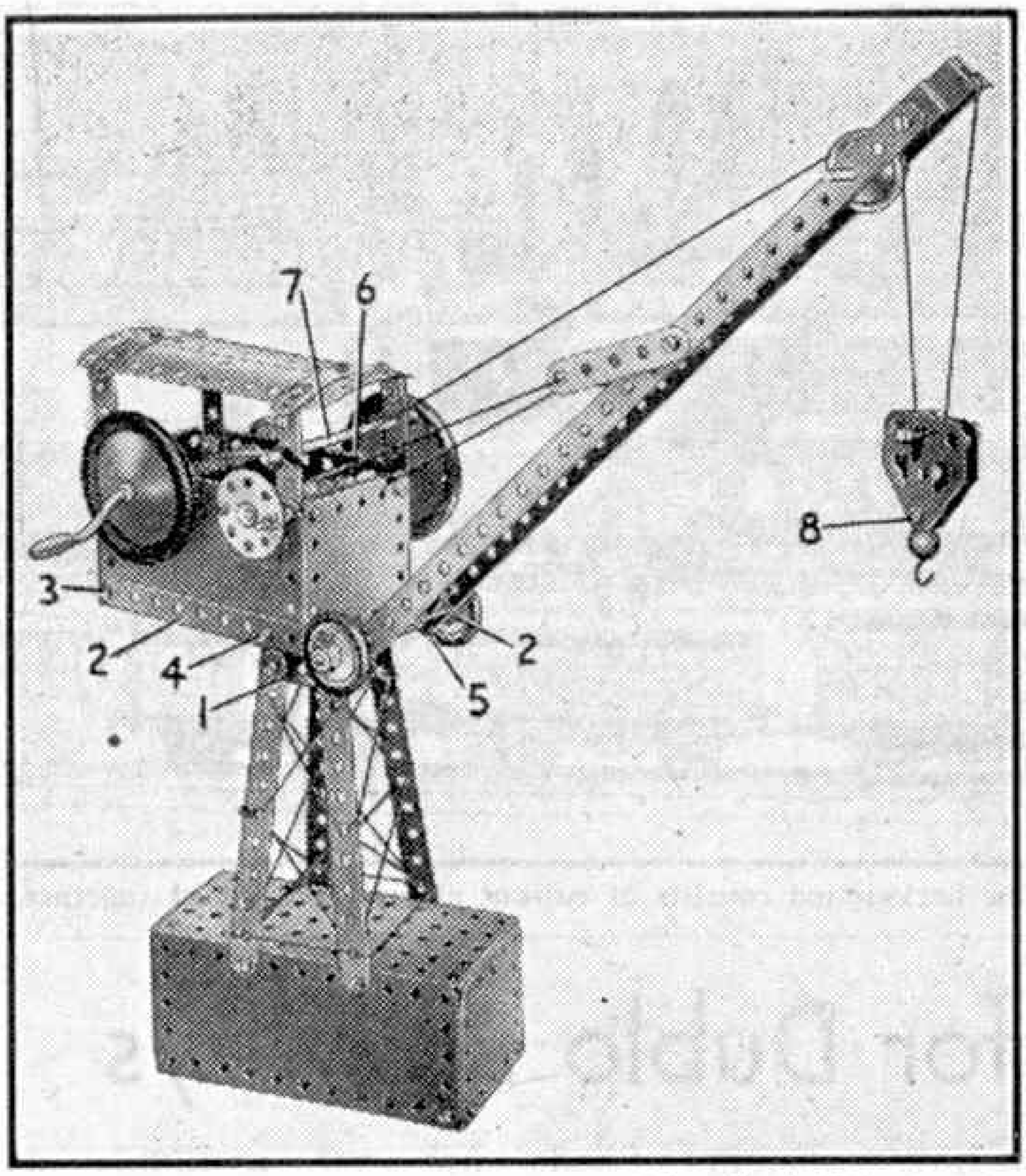


Fig. 2. A stationary crane of a type used in ship-building yards, where its long jib permits it to lift loads to great heights. The model can be built from Outfit No. 3.

Double Angle Strip held by the Bolt 3, and the front is formed by a similar Flexible Plate fastened to the sides by Angle Brackets. The roof consists of two $5\frac{1}{2}'' \times 1\frac{1}{2}''$ Flexible Plates joined together and bolted to Formed Slotted Strips. It is attached by Angle Brackets to $2\frac{1}{2}''$ Strips bolted to the sides of the cab.

The jib consists of two $12\frac{1}{2}''$ Strips bolted at their outer ends to a Stepped Bent Strip to form the jib head, and connected together by two Reversed Angle Brackets 5 at their inner ends. It pivots about a $3\frac{1}{2}''$ Rod passed through the end holes of the Strips 2, and is held in position by two 1" Pulleys.

The jib is luffed by means of a Bush Wheel fixed on a $3\frac{1}{2}''$ Rod 6. A length of Cord extending from this Rod is passed through $2\frac{1}{2}''$ Strips bolted to the jib and is tied to the front of the cab. A $\frac{3}{8}''$ Bolt is fitted to the Bush Wheel so that it engages in one of the holes in the side of the cab, and holds the jib in any desired position.

Movement of the load is controlled by a length of Cord attached to a $3\frac{1}{2}''$ Crank Handle. The Cord is passed under a $3\frac{1}{2}''$ Rod 7 and around a 1" Pulley fixed on a 2" Rod in the jib head. It is then passed around a $\frac{1}{2}''$ loose Pulley in the pulley block and finally is tied to the jib head.

The pulley block consists of two Flat Trunnions held together by a $\frac{3}{8}''$ Bolt 8. The $\frac{1}{2}''$ loose Pulley is free on a $1\frac{1}{2}''$ Rod passed through the Flat Trunnions.

Prize-Winners in Meccano Competitions

Novel "Short Story" Contest (Home Section)

1st Prize, Cheque for £2/2/–: P. Ponsford, Welling. 2nd, Cheque for £1/1/–: B. Parfitt, Romford. 3rd, Postal Order for 10/6: W. H. Stephenson, Mansfield.

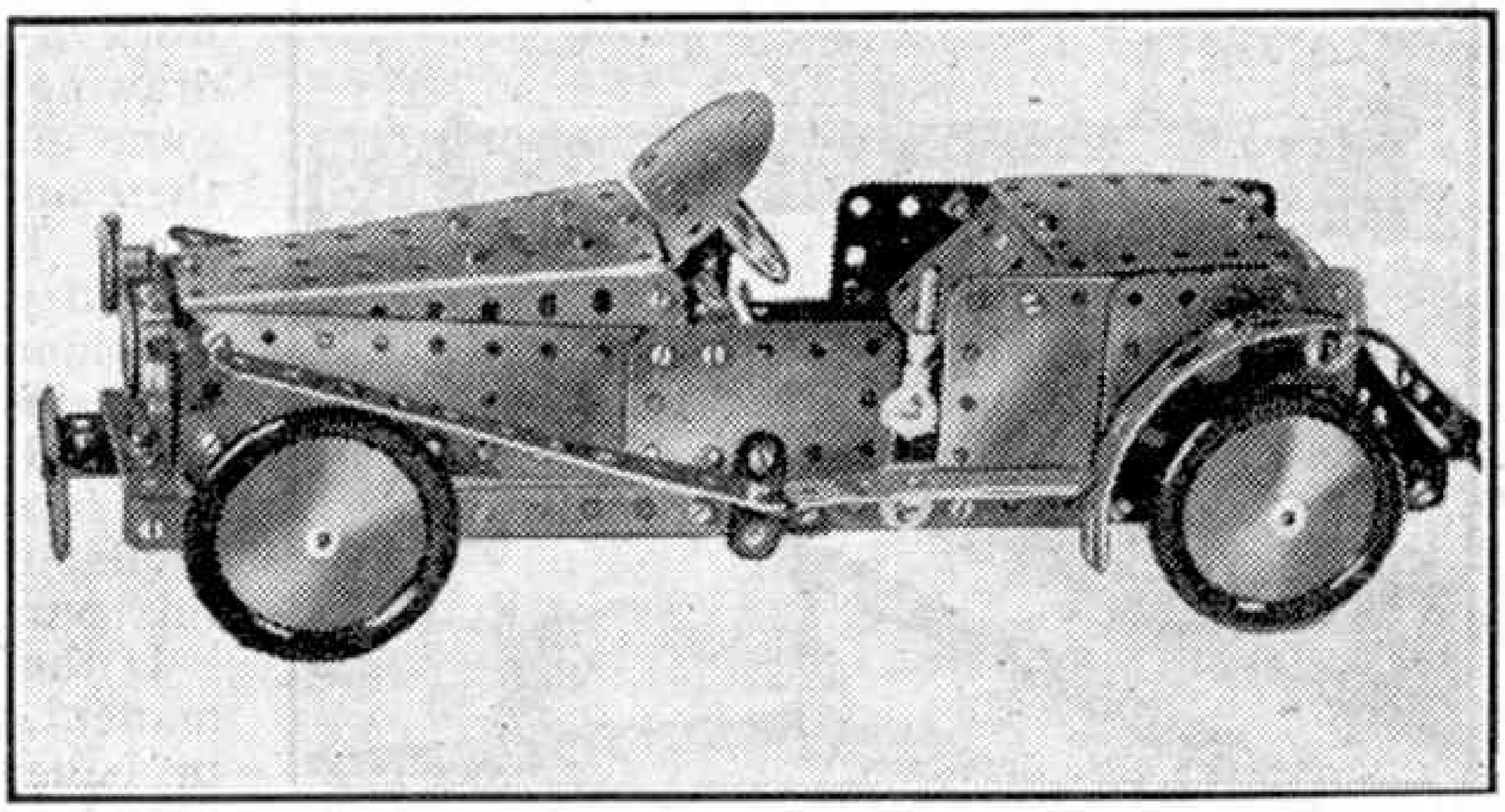
Consolation prizes of 5/–: J. P. Nicholson, Lincoln; G. Pick, Retford; D. Lee, Rochdale; J. Boys, Andover; C. P. Sinfield, Birmingham.

Outfit No. 4 Model-Building Contest (Home Section)

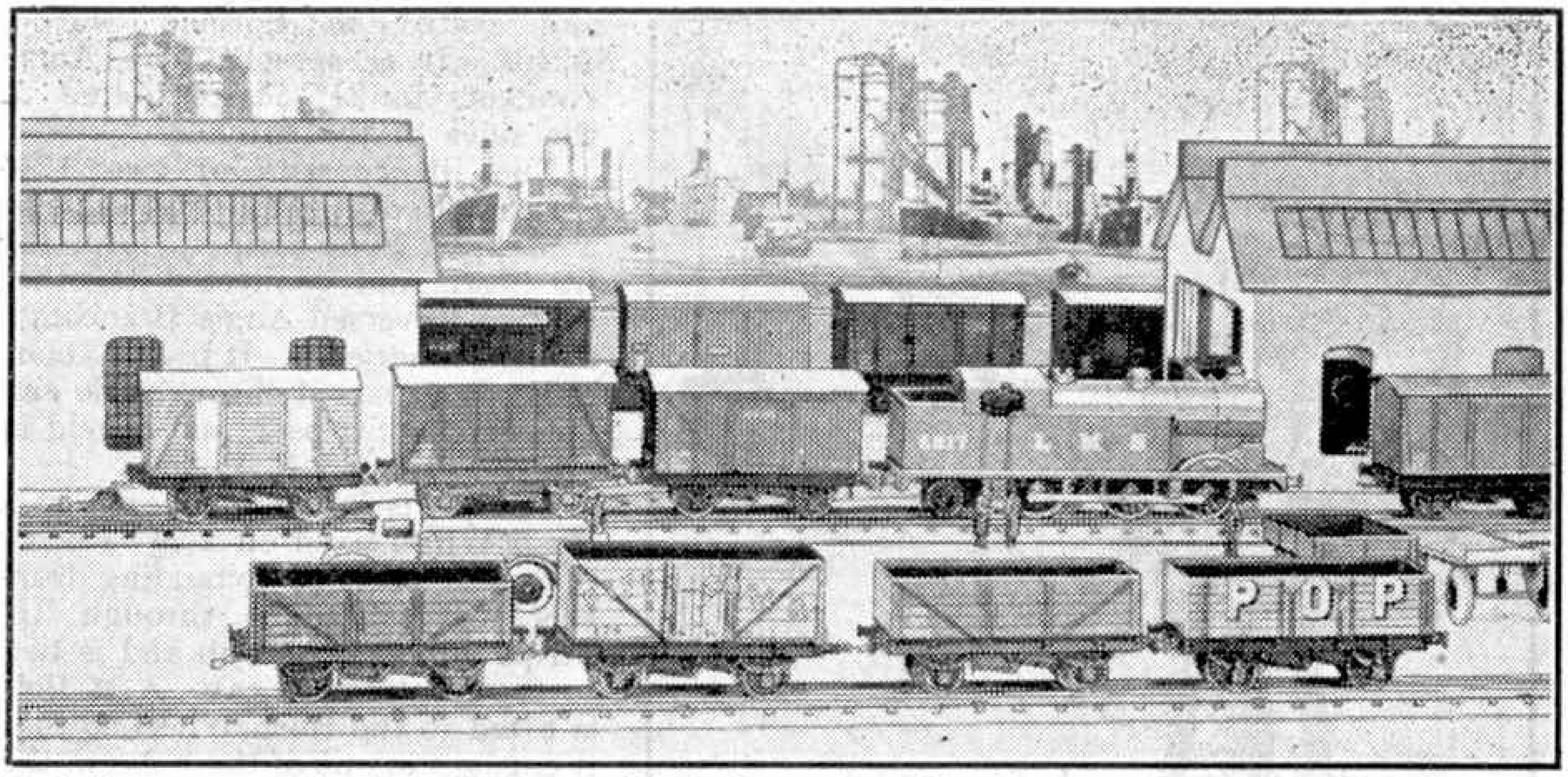
1st Prize, Cheque for £2/2/–: R. J. Tomlinson, Padiham. 2nd, Cheque for £1/1/–: R. Reynolds, Birkenhead. 3rd, Postal Order for 10/6: R. Martin, Hindhead.

Consolation prizes of 5/–: K. MacKenna, Dublin; D. Arran, Wakefield; A. Spinks, Liverpool 16; R. Taggart, Carluke; A. J. B. Fluck, Swindon.

R. J. Tomlinson's prize-winning model was a well constructed mechanical shovel.



A neat two-seater sports car, built by H. D. Wyatt, Wilmslow, who was a prize-winner in a recent Meccano Competition.



Dockside scene on a Hornby-Dublo layout. The background consists of cut-out pictures assembled together.

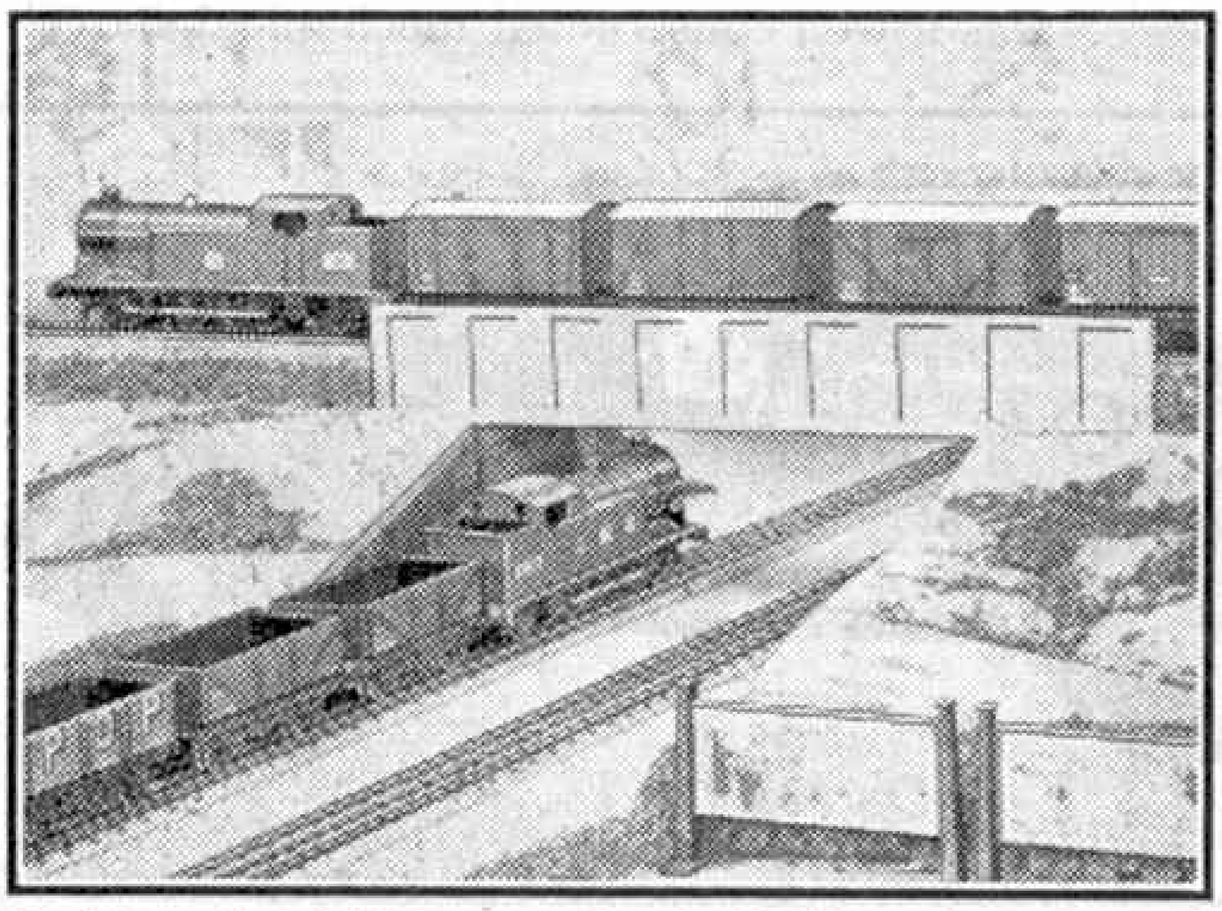
Scenic Hints for Dublo Railways

THE illustrations on this page show how the addition of a scenic background and built-up items adds to the realism and interest of a Hornby-Dublo railway.

The upper picture represents a typical railway scene in a dock area with its background of cranes and elevators. The background was built up of parts of pictures cut from advertisements. These were pieced together to form a scene of suitable shape and gummed down on a sheet of thick paper. Alternatively, the background could be drawn or painted on a sheet of board or card. The goods warehouses shown are Hornby-Dublo Engine Sheds—not yet available unfortunately—but similar buildings could be made up at home of wood or card.

The two Private Owners' wagons are standard Hornby-Dublo vehicles which have had paper ends and sides glued over the original bodies, and painted with designs drawn from real wagons. A few visits to the local goods station will usually provide plenty of material for suitable lettering and designs.

Bridges always add to the realistic effect and if a high-level line runs over them so much the better. The bridge in the lower picture is built with a wood floor and abutments, and cardboard sides, suitably painted. The embankment of brown paper is built on a framework of wood and fixed in place with drawing pins. The next step is to dab some glue over the surface here and there and sprinkle these patches with sand. The rest can be painted after it is dry.



An interesting bridge on a Hornby-Dublo system arranged on two levels.

Coloured advertisements from old magazines often provide useful material for display on station walls and hoardings. Food packages and similar items give useful material for this purpose.

If the layout is more or less permanent, the effect is greatly improved by ballast between the tracks. Fine limestone grit, obtainable from pet stores, is good for this purpose.

Club and Branch News

WITH THE SECRETARY

RAILWAY LANTERN LECTURES

A set of 15 lectures on the history and beauty of England and Scotland is now available on loan without charge from the Eastern and North Eastern Regions of North British Railways. These should be ideal for including in the programme of Clubs and Branches which possess a lantern, or are able to borrow or hire one. The lectures are printed, so that they can be delivered by a senior official or member, and each is accompanied by lantern slides.

Typical lectures are "*London*," with 90 slides, and "*Edinburgh, The Lothians and Border Country*," with 89. These take about 1 hr. 20 min. each to deliver. Others deal with various counties and such attractive districts as the "*Western Highlands*" and "*The Yorkshire Dales.*"

The lectures and slides can be obtained from The Advertising Manager of the Eastern and North Eastern Regions, British Railways, 26, Pancras Road, London N.W.1. Leaders and Chairmen who are interested should write for further details with a complete list of lectures.

PROPOSED BRANCHES

BUCKHURST HILL—Mr. G. C. Flowers, 91, Queen's Road.

NORBURY, S.W.16—J. Ducat, 96, Longthornton Road.

NOTTINGHAM—S. C. Lodge, Ten Barden Road, Mapperley Plains.

CLUB NOTES

PETERBOROUGH M.C.—Model-building and Games have been enjoyed. In the former a contest has been held for the best working mechanical model constructed with the fewest number of parts. One meeting was devoted to tricks and puzzles. Club roll: 6. *Secretary:* R. H. Booker, 110, Alexandra Road, Peterborough.

HENLEAZE M.C.—Special events have included a Gramophone Night, a Christmas Party and a "Twenty Questions" meeting. At the Annual General Meeting the Treasurer was able to report a balance of over £4. Club roll: 17. *Secretary:* M. E. Frost, 32, Oakwood Road, Henleaze, Bristol.

The fascination of model railways is well shown in this photograph of the scene at an Exhibition organised by the Perse School (Cambridge) Branch, Chairman, Mr. D. Smith; Secretary, J. R. Addy. The many visitors were intensely interested in the Hornby Railway, which was operated efficiently by the members, and also in an extensive display of railway models and other attractions. Photograph by courtesy of the "Cambridge Daily News."

BRANCH NEWS.

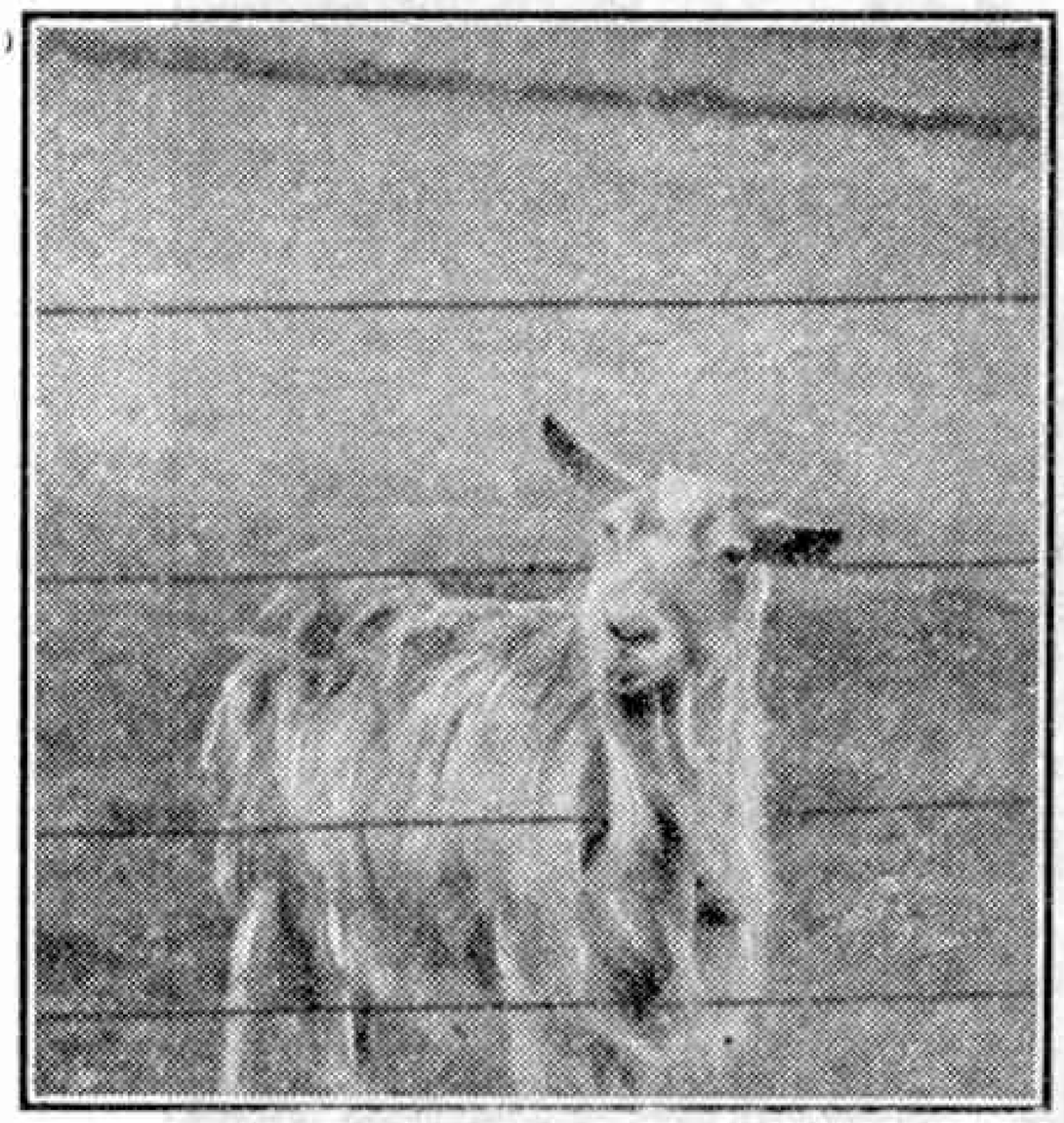
WEYMOUTH AND DISTRICT—The track has been extended, the engine shed is now complete and a station is under construction. Fishing, Cycle Runs, Wood Cutting and Football are also included in the programme, which is thoroughly enjoyed by members. *Secretary:* A. J. Brown, 68, Wyke Road, Weymouth, Dorset.

CRAIGWEIL—Splendid operations on the Branch track have been enjoyed, thanks to careful construction and testing during track laying. A new terminus has been added, and colour light signalling has been planned and is being introduced in stages. A new track is to be planned and erected. *Secretary:* J. S. Evans, Two Orchard, Aldwick Bay, Bognor Regis.

Photography

Springtime Activities

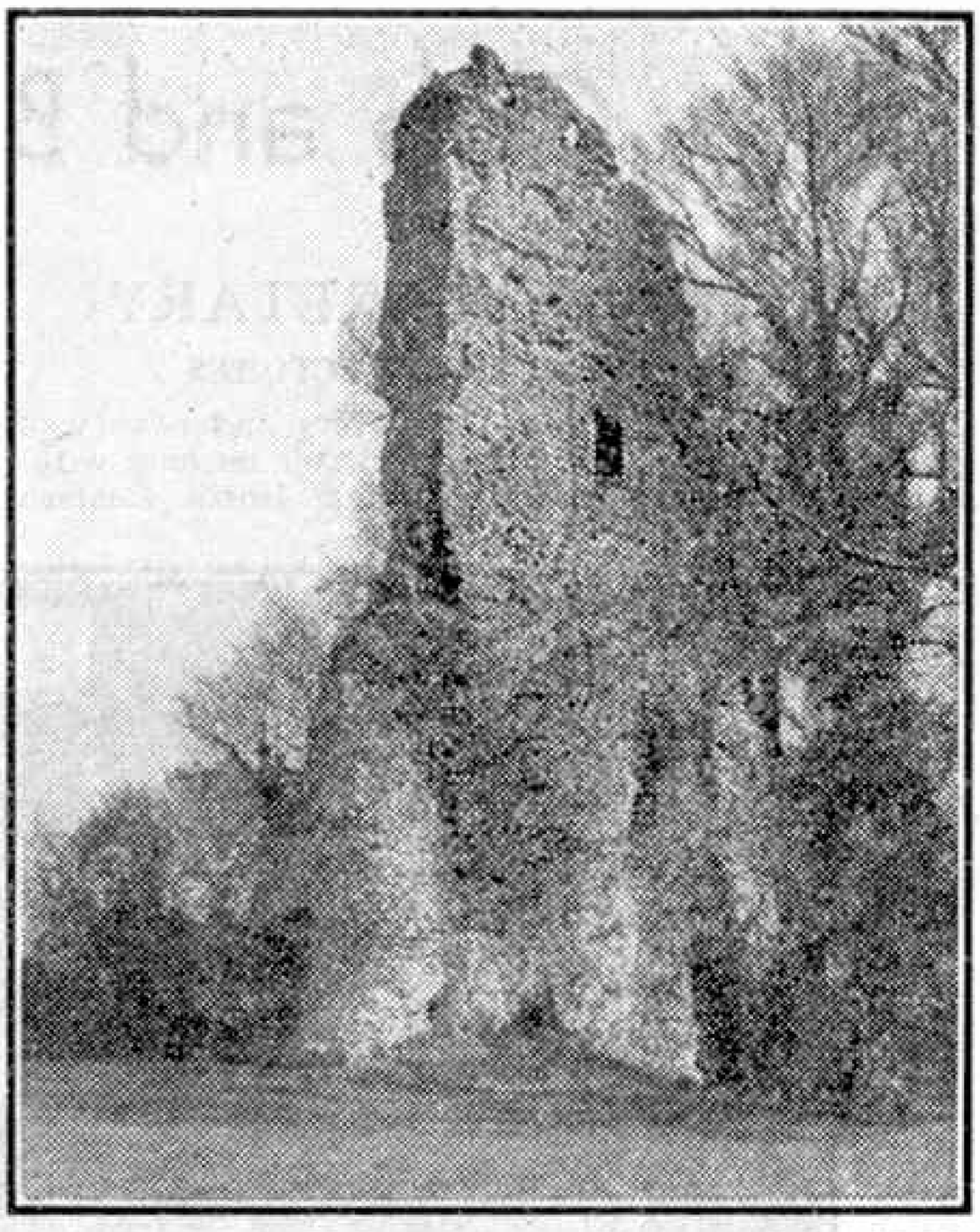
MARCH seems to be the month in which most amateurs begin to think of photography and to dig out their cameras from their winter hiding places. Every camera that has been out of use for some months is certain to have collected



"Inquisitive." Photograph by A. Semple, Edinburgh 10.

more or less dust, not only outside but inside also. It always astonishes me how dust finds its way to the "innards" of cameras and similar articles. As dust is fatal to good photography, it is very necessary to spend a little time in getting rid of it. Having done this, make sure that the camera is light-tight. Trouble in this way is usually limited to one or more tiny holes in the bellows, and this can be dealt with by the application of a small piece of adhesive plaster. If the light leaks result from more serious causes, a photographic dealer should be consulted.

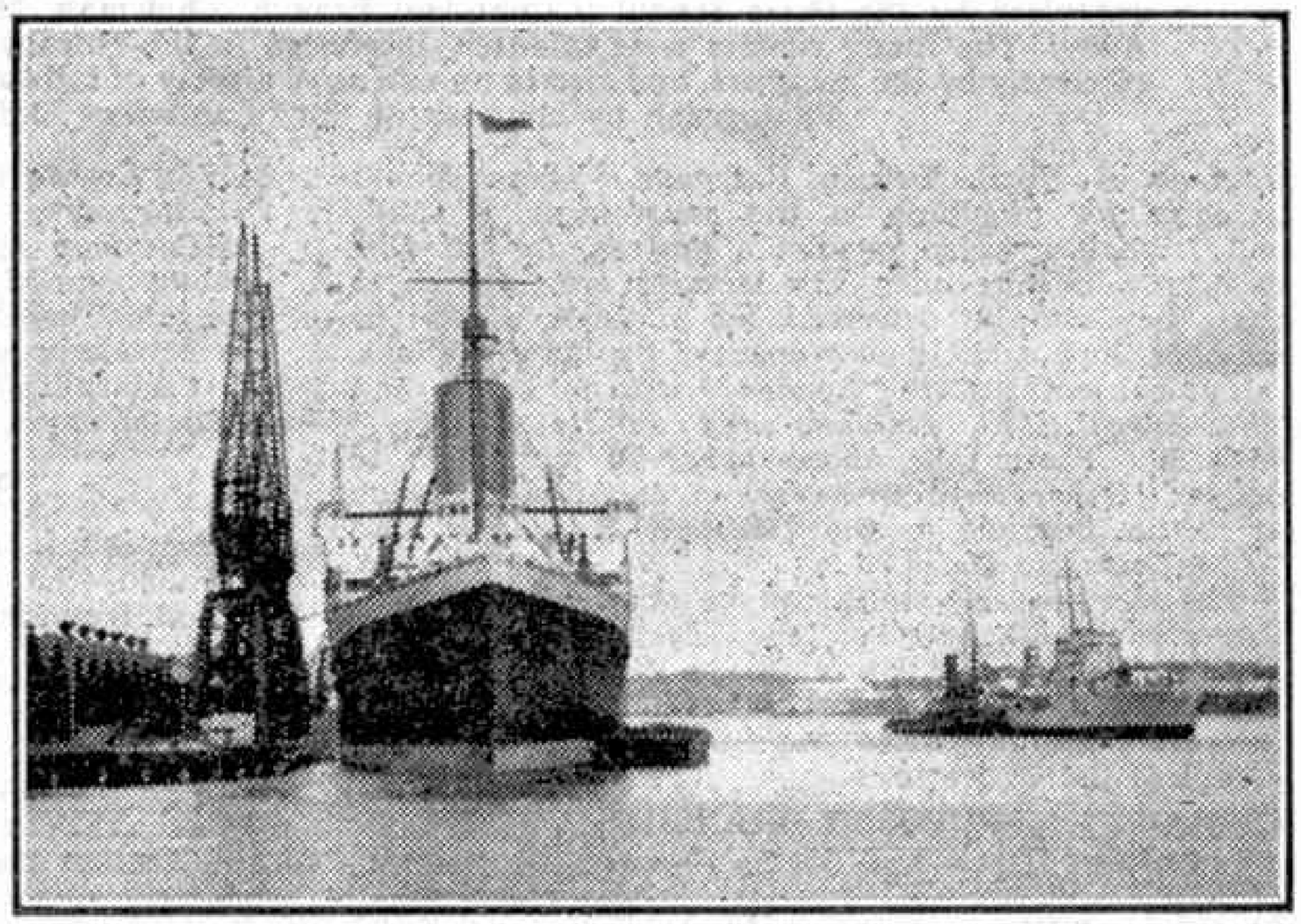
The next important step is to clean the lens. A lens surface is very sensitive, and requires gentle treatment. Remove dust



Bramber Castle Ruins, Sussex. Photograph by G. R. Brown, Hove 4.

by means of a camel's hair brush, and polish with a soft silk handkerchief.

The photographic material in March is varied and interesting. The first flowers are making their appearance, and snowdrops and crocuses, and later daffodils, will provide good pictures. A group of these flowers usually gives the best result, but a close-up of a single plant may be equally effective — a plant portrait in fact.

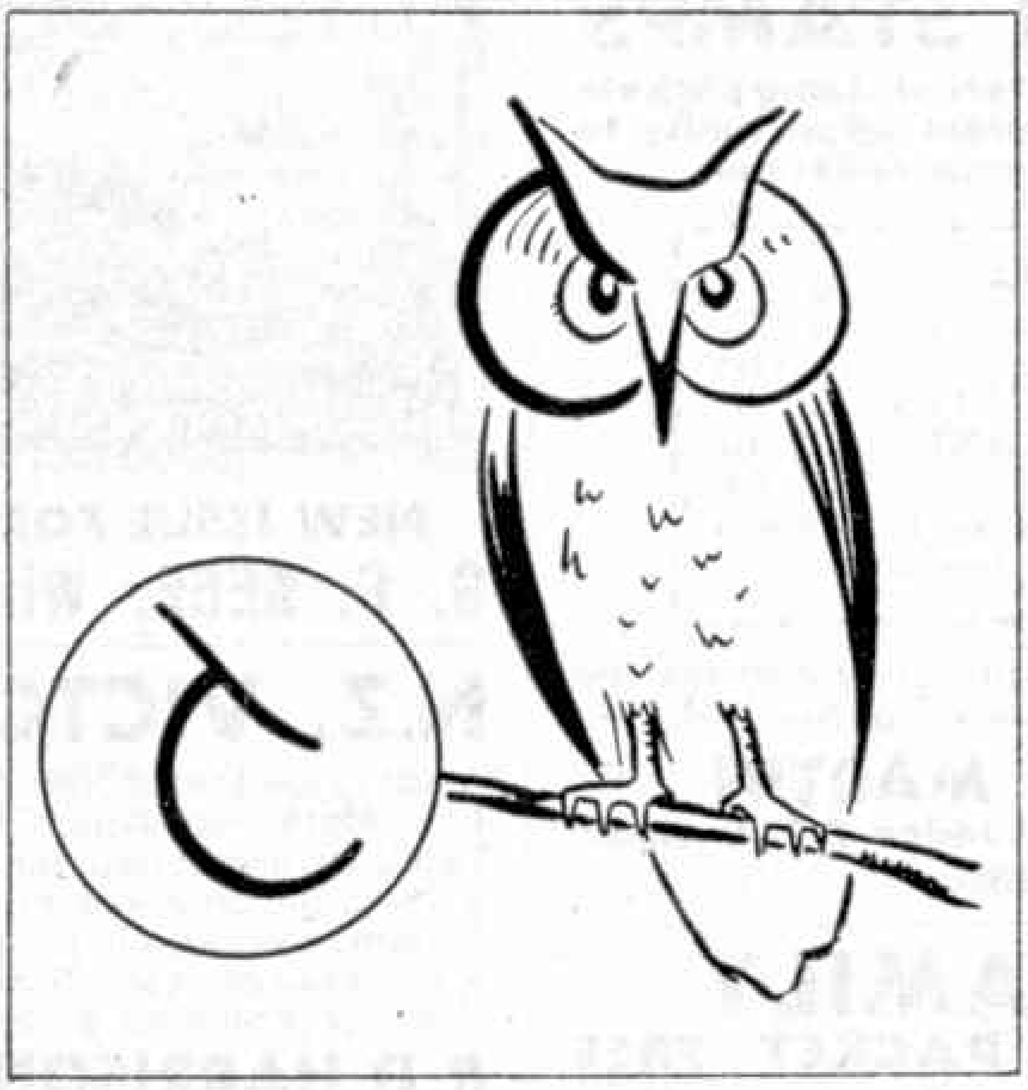


The mouth of the River Itchen, with R.M.S. "Asturias" and a Portuguese destroyer. Photograph by W. R. H. Temple, Upminster.

Competitions! Open To All Readers

Prize-winning entries in "M.M." competitions become the property of Meccano Ltd. Unsuccessful entries in photographic, drawing and similar contests will be returned if suitable stamped addressed envelopes or wrappers are enclosed with them.

A Novel Drawing Contest



Here is a contest of a kind that was very popular with readers of the "*M.M.*" before the war. It is a kind of drawing contest, but no particular drawing skill is required. All that competitors are asked to do is to make a simple line drawing that includes somewhere within it, as an essential part, the line shown at the left of the accompanying example. On the right of this illustration is a drawing of an owl in which the basic line has been incorporated in the left side of the head of the bird. This will serve as an example of what is wanted, but it must not be copied, and drawings need not be birds.

The basic line can be used in the sketch as often as the competitor likes, and he may tilt it to any angle, or turn it completely round or upside down. Any subject whatever is eligible. Competitors should try to find one that is striking or original in some way. They are advised to send in bold and simple drawings in which the line appears only once. Using it several times in a complicated drawing makes it only a minor feature. Ingenuity in working in the basic line will be a factor in deciding on the winners of the contest.

As usual, the competition will be divided into two sections, for Home and Overseas readers respectively, and in each there will be prizes to the value of 21/–, 15/– and 10/6 for the best entries in order of merit, with a number of Consolation awards. Closing dates: Home Section, 30th April; Overseas Section, 30th October.

What Locomotives are These?

This month we present another of our popular "Hidden Names" Contests. The subjects are 14 names of locomotives, but this time we have selected engines of the smaller railways of this country and certain Irish railways by way of a change.

Here are the 14 incomplete names: W–D–F–; G–Z–L–E; S–U–H– –N M– –D; R–V–R E–K; T–O– –H– –L; J– –N; G– –E–O–E; L–G– –Q–I– –A; E–N–S– –L– –N; T–E M–I–E; O– –E–F– – – T C–S– –E; G– –T– – M– –E; T– –L–E; C– –E– –N–A.

To make everything clear we may take the first on the list. The letters given are W–D–F–, and this will soon be recognised as WYDDFA, the name of an engine of the Snowdon Mountain Tramway in North Wales.

The competition will be divided into the usual two sections, for Home and Overseas readers respectively, and in each there will be prizes to the value of 21/–, 15/– and 10/6, for the best entries in order of merit, with a number of Consolation awards. Closing dates: Home Section, 30th April; Overseas Section, 30th October.

March Photographic Contest

This is the third of our 1948 series, and in it we make a change in the conditions. Instead of a photograph of any kind, entrants are asked to submit photographs dealing with some Spring subject. For instance, operations at this time of the year on the farm would provide suitable entries. Apart from this there are only two conditions—1, that the photograph must have been taken by the competitor, and 2, that on the back of the print must be stated exactly what the photograph represents. A fancy title may be added if desired.

Entries will be divided into two sections, A for readers aged 16 and over, and B for those under 16. They should be addressed "*March Photographic Contest, Meccano Magazine, Binns Road, Liverpool 13.*" There will be separate sections for Overseas readers, and in each section prizes of 21/–, 15/– and 10/6 will be awarded. Closing dates: Home Section, 31st March; Overseas Section, 30th September.

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This **Superb** packet contains the large **Obsolete NYASALAND** and fine **U.S.A. Utah Commemorative** as illustrated on page 421, Oct. *M.M.*; also latest **PAKISTAN** issue; **SUDAN** (Camel); **AND** a scarce **S. AFRICA Victory** issue. **All Free** to collectors asking to see my **Bargain** Approvals and sending 3d. for postage and lists of sets that will surprise you. Don't miss this wonderful offer. (Without approvals, price 8d.).

G. L. WRIGHT (formerly H. C. Watkins, Barnet), Dept. U, 29, Palace St., Canterbury, Kent

For other Stamp Advertisements see also pages 102 and vii.

Stamp Collecting

A "Princess Elizabeth" Collection

By F. Riley, B.Sc.

GREAT BRITAIN was content to commemorate the wedding of Princess Elizabeth by the use of a special postmark for a short time. Canada and Australia have done much better than this, for in both Dominions handsome stamps marked the event. The Canadian, 4c. in value, was to have been issued on 15th January, but production difficulties made it necessary to postpone its appearance until 16th February. At the time of writing the actual stamp is not available, but I am able to reproduce an illustration showing the design, and the stamp itself will measure 22 mm. by 26 mm. Australia's wedding commemorative was illustrated on the "*Stamp Gossip*" page of last month's "*M.M.*" It is 1d. in value, and purple in colour.

The appearance of these two stamps led me to look up the previous issues on which portraits of Princess Elizabeth appeared, and I find that with these additions there are now 21 of them. Here is a good subject for a little special collecting. The Princess is our future Queen, and there is no doubt that many more stamps bearing her portrait will be issued, so that eventually a very attractive collection will become possible. Now is a good time to begin forming such a collection, for practically every one of these stamps is readily obtainable at reasonable prices, and further stamps added to the collection should be bought at little over face value.

Let us look at the material available for our collection. It will surprise many to learn that the earliest Princess Elizabeth stamp was issued more than 16 years ago, when Her Royal Highness was only six years of age. The distinction of issuing the first stamp to qualify for our "Princess Elizabeth" collection belongs to Newfoundland, and the stamp itself was the 6c. value in set of 1st January 1932. The stamp was light blue in colour, and the portrait has a rose on one side of it and a thistle on the other.

It was only three years later that Canada paid tribute to the Princess by the issue of a stamp, which was one of the Silver Jubilee set. The 1c. value of this set carries a portait of the Princess in an oval. Canadians had only a few years to wait for another stamp suitable for our collection, for the Royal Visit to Canada in 1939 was made the occasion for a special issue of three stamps, the 1c. value of which bore portraits of Princess Elizabeth and her sister Princess Margaret Rose.

Down to the outbreak of war the three stamps already mentioned were the only ones on which a portrait of Princess Elizabeth could be seen. The war period was not very favourable for the introduction of new stamps anywhere within the British Dominions, but the two Princesses were associated with two pairs of war-time stamps, appearing in 1943 and 1944 respectively, that are among the most popular that have ever been produced. These are two sets of the famous New Zealand Health series, charity stamps issued at a premium, the proceeds of which are devoted to child welfare work in the Dominion. The stamps of 1943 had the distinction of being triangular; the 2d. value, which had an extra charge of 1d., was the one carrying the portrait of Princess Elizabeth; the 1d. + ½d. stamp of similar design bore the portrait of Princess Margaret Rose. Next year two stamps of the same design were issued, showing the two Princesses together.

So far our collection has grown slowly, but this was only to be expected in view of the youth of the outstanding figure in it. A sudden expansion came with the Royal Visit to South Africa in 1947. It was only natural that such an event should be celebrated by the appearance of a special issue of stamps, and three excellent designs were chosen to mark it. Their values were 1d., 2d. and 3d., and of these the 3d. value was devoted to the two Princesses, portraying them side by side, flanked on the left by a springbok and on the right by an aloe bush, representative respectively of South African animal and plant life.

As is usual with the stamps of the Union of South Africa, these appeared in two forms, with inscriptions in English and in Afrikaans respectively, so that there are two stamps for our Princess Elizabeth collection. Two further stamps, overprinted SWA, were issued in South West Africa, and in addition there were two "Princess Elizabeth" stamps in sets that were issued in the Protectorates of Basutoland, Bechuanaland and Swaziland. Here again the 3d. value shows the two Princesses, and in each set there is also a 1/- value that reproduces portraits of all four members of the Royal Family. The same design was used for each of the Protectorates, with the words Royal Visit 1947 in addition to the name of the Protectorate actually concerned.

Southern Rhodesia also shared in the Royal Visit, and celebrated the event by the issue of a set of two stamps, one of which we must include. This was a ½d. value in black and green that depicts the two Princesses. Royal portraits

(*Continued on page 104*)

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Send NOW to the **Windsor Stamp Co.** for this very lovely Packet of **U.S.A. Commemorative Stamps**—it will be sent to you **ABSOLUTELY FREE** to add interest and value to your very own collection. It contains, amongst others, the fine stamp illustrated, which was issued to commemorate the achievements of the UNITED STATES MERCHANT MARINE in Peace and War, and depicts an armed Liberty Ship Unloading Cargo. In addition, this Free Packet contains an attractive large new stamp depicting THOMAS EDISON, commemorating the Centenary of the death of this famous inventor, AND ALSO yet another fine Army and Navy stamp issued during the war and showing a 90-Millimetre ANTI-AIRCRAFT GUN. Get all this wonderful packet **ABSOLUTELY FREE**—just write for U.S.A. COMMEMORATIVES PACKET FREE and Approvals, and enclose 3d. stamp for our postage of Free Gift and Approvals to you.

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	Mint	Used
Burma Independence	2/6	—
India Independence	2/9	3/3
Pakistan Complete	£7 0 0	—
,, to I R only	12/6	—
Mauritius Centenary..	2/9	3/3

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Extra Leaves, 50 for 3/11
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1d. ea.: 195, 268, 280, 289, 290, 301, 302, 303, 306, 311, 312, 335*, 335, 336*, 336, 337*, 337, 338*, 338, 339* 339, 340, 341, 342, 343, 355, 372, 374, 386C*, 386C, 388, **2d. ea.:** 147, 259, 265, 277, 278, 281, 291, 292, 293, 305, 307, 308, 309, 310, 330*, 344A, 356, 360A, 362, 372*, 373, 386B, 387D, 387DA, 387E*, 387E, 411. **3d. ea.:** 148, 256, 301*, 331*, 332*, 333*, 342*, 344, 346A, 357, 368, 373*, 383*, 383, 387DA*, 388*, 389*, 389, 390, 391, 392, 398*, 402*, 403*, 417. **4d. ea.:** 187, 245, 256*, 257, 259, 266, 359A, 361*, 361, 362*, 374*, 400*, 402, 403, 404*, 409. **6d. ea.:** 122, 196, 197, 204, 205, 283, 314, 316, 318, 320, 346, 347A, 348A, 372A, 373A, 375*, 384*, 390*, 391*, 392*, 398, 400, 401*, 404, 405*. **9d. ea.:** 121, 123, 178, 202, 203, 250*, 269, 285, 294, 321, 375, 376, 377, 384, 385*, 385, 393*, 393, 401, 405, 414. **1/- ea.:** 209, 241, 258, 348, 369, 376*, 378, 394E*, 394E, 412. **1/3 ea.:** 146, 273, 279, 305*, 379, 394D, 395. **1/6 ea.:** 207, 211, 261, 271, 282, 345, 380, 413, 421, 424. **2/- ea.:** 378*, 381, 395*, 418. **2/6 ea.:** 199, 349A, 370, 379*, 396, 399*, 399, 410. 422, 423. **5/- ea.:** 371, 364, 416.

F. Harlow (B.P.A.), 133, Bradbourne Vale, Sevenoaks, Kent

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Feb. Winners: 0780, 0801, 0829, 0847, 0899

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S. H. Fleming, Glyn Avenue, Colwyn Bay

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Special Packet. 77 Stamps from 77 Countries	5/6	50 Canada ..	1/6
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B. PURCELL, 22, Green Lane, AMERSHAM, Bucks.

For other Stamp Advertisements see also pages 100 and vii.

Stamp Gossip
and Notes on New Issues

By F. E. Metcalfe

OUR British colonial stamps of to-day are, on the whole, beautiful productions, which accounts to some extent for their popularity, but they are up against stern competition from many foreign countries. Take the set that was issued last year by Belgian Congo. This comprised three stamps to commemorate the "50th Anniversary of the Abolition of Slavery in the Belgian Congo." We are illustrating the lowest value, which depicts the driving of slaves to market. The stamp itself is a gem of engraving, and surely such an example of art in miniature is worth a place in any collection.

While in Africa we might as well consider a stamp which should be of great interest to lady collectors. It is part of the current set recently issued for use in French West Africa, and all the writer of these notes feels competent to say about the design is that it principally depicts some head dress. The various French Colonies are emitting new stamps all the time, but they form a wonderful collection, and such are the designs that a clear picture of native life in the countries concerned can be gathered from a study of the stamps alone.

While we are on about pictorial stamps, it would not do to leave out the U.S.A. It has to be admitted that the stamps of this country are not in the same street, when looked at from an artistic standpoint, as say the new French Colonial stamps. At the same time these American pictorials are easily come by, and quite attractive in their way, and thus are exceedingly popular with British collectors. The latest to appear, a stamp issued in honour of the Everglades National Park, Florida, will be just as popular as the rest. It is printed in green and is quite a nice stamp. Collectors of U.S.A. pictorials will be pleased indeed that the postal authorities concerned have departed from the eternal purples, which they used for so long.

Our fourth stamp is one of a short set issued not long ago by Poland, and the motif is of particular interest to British collectors, occupied as we are with the question of coal production. Prior to the last war, Poland was a great competitor of this country as far as coal was concerned, and already they are pushing ahead again. The 20z. stamp illustrated shows that the Poles are alive to the necessity for more coal.

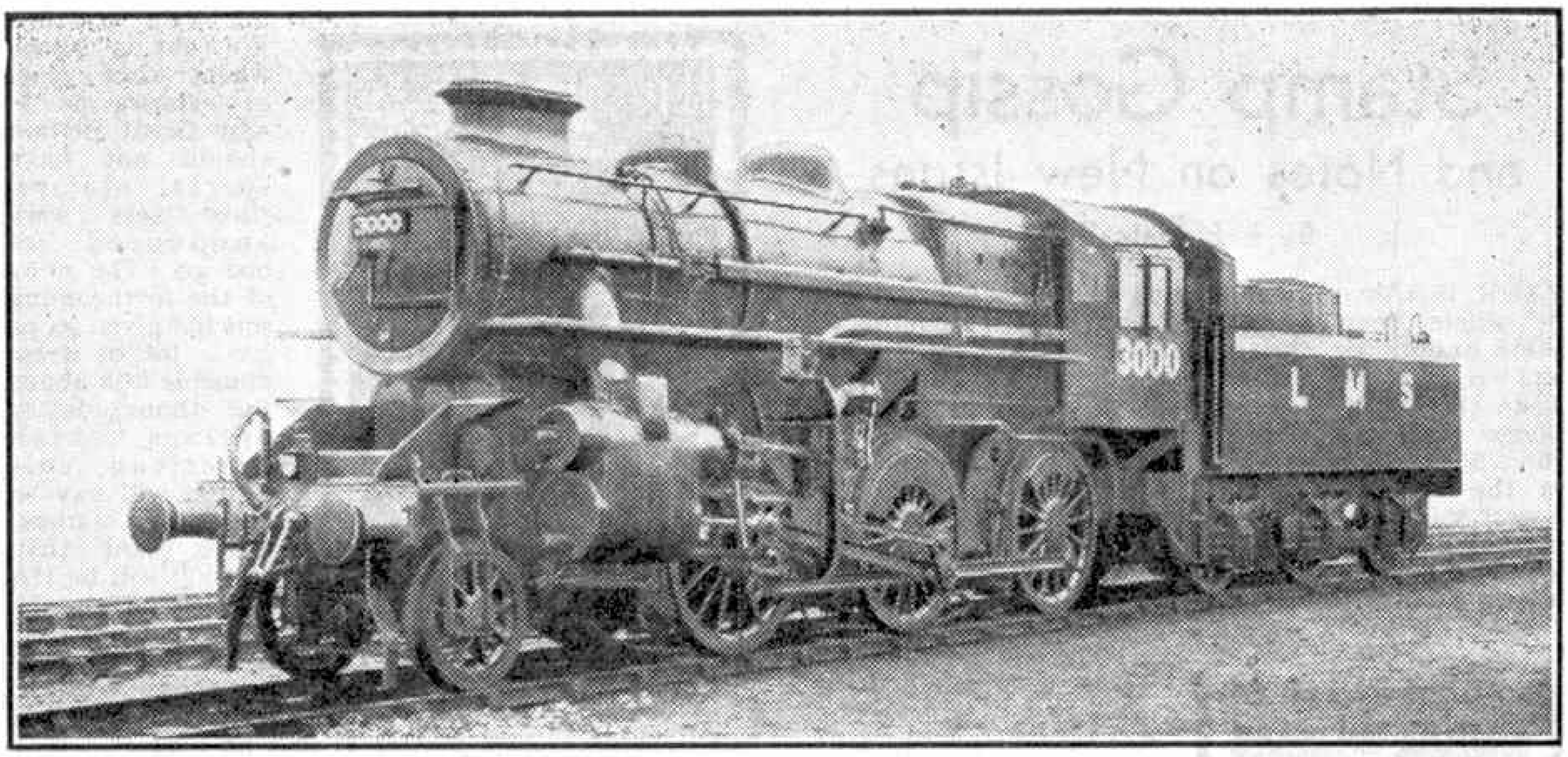
All this leads to the forthcoming commemorative stamps of our own country. We got a shock when, after years of excuses as to why Great Britain should not have special stamps, three sets were announced at one go. The news of the forthcoming sets has given scope for a lot of irresponsible talk about the thousands of dollars which American collectors will pay to get these stamps. It is said that 200,000 will be the number of the £1 stamp alone that will be bought by those Western collectors, which is just nonsense. As a matter of fact nothing like that quantity will be bought altogether, and it must be remembered that the American market for modern British stamps is, speaking relatively, not particularly important at all; it is doubtful if 20,000 of the £1 stamp will cross the water.

The writer of these notes has agitated for years, as have many other philatelic writers, for this country to bring out commemorative stamps fairly regularly, but it was never imagined, nor desired, that so many would be brought out at once. It would have been all right if a stamp had been emitted to celebrate the Royal Silver Wedding, but as this event is purely a British affair, a 2½d. stamp was all that was needed. A short set in honour of the Olympic Games was also indicated, but what on earth does the Channel Islands want a pair of stamps for, to be put on sale for a summer season only, as though they were tomatoes or ice cream?

The greatest mistake is the issue of a £1 stamp as a commemorative, with a life, or so it is announced, of one month only. This country undoubtedly needs a £1 stamp, with airmail postal rates so high, but by calling that stamp a commemorative, and limiting its period of issue to one month, we are giving overseas collectors the chance to say that our Post Office is out to exploit them, and that is a very bad start to such an important new venture.

The recent issues of Burma and Pakistan have been giving a great deal of trouble to dealers, particularly those who run new issue services. Most of the large dealers placed their orders for Burma through London, and they were mortified with the news that their parcels of stamps had arrived, but had been sent back, as the 2½a. value was missing and the rest were damaged. By the time these words are in print, the situation may be clearer.

Burma stamps have always been very popular, but now that this country has left the Empire and her new stamps, which are the life-blood of a collection, are now only foreign issues, a gradual lowering of interest is to be expected. So collectors should be warned about paying high prices for overprinted stamps issued during the Japanese occupation.



L.M.S. No. 3000, the first of the new "4F" 2-6-0 locomotives recently built at Horwich. These engines are intended ultimately to replace the "4F" 0-6-0s hitherto standard. Special reference to the new Class will be made in next month's "M.M." (London Midland Region photograph).

Oil for Britain—(*Continued from page 83*)

fuming sulphuric acid with excess sulphur trioxide, and is a powerful reagent which seeks out and reacts with all but the most stable hydrocarbons to form an acid sludge. This settles and is run off from the base of the agitator. From the acid sludge are derived the *water*-soluble petroleum sulphonates: valuable liquids now used as special detergents and replacement products in place of "conventional" type soap (no coupons or permits required).

After the last treatment, the acid-oil remaining in the agitator is run to neutralising tanks, where the acid is neutralised with caustic soda. The products of neutralisation are soluble in alcohol. Accordingly, alcohol is run into the neutralising tank, where it dissolves the products of neutralisation and forms a heavy sludge which is drawn off from the bottom of the tank. From the sludge are derived the *oil*-soluble petroleum sulphonates which are used as emulsifying, wetting and dispersing agents in the formulation of sprays, creams, proofing compounds, etc.

The remaining oil is washed repeatedly with water and then run to steam heated mixing tanks where clay is added to remove the last traces of colouring matter. The oil and clay are in this case pumped direct to a filter press in which the clay is filtered off.

(iv) **Medicinal Liquid Paraffin**

Medicinal liquid paraffin was not manufactured in England at all before M.O.R. put down their plant, and to-day the refinery is the major producer in the United Kingdom.

A specially selected solvent extracted lube 2 fraction is the starting material. The initial processes consist of modifications, under special conditions, of the white oil treatments outlined above, except that acid is used in place of oleum. After the final filtering—following clay treatment—the oil is chilled to –2 deg. C. at which temperature every trace of wax is filtered off by a special filter in a chilled room.

During the acid treatment of liquid paraffin, yet another valuable liquid is produced, consisting of "sulphonic acids" from which fat-splitting agents are derived for use in soap manufacture.

We have now dealt with all the main refining processes employed at M.O.R. It should be realised that these finished oils are still only the "raw materials" for blending into the final products which reach the customer. Blending is a precise art which deserves more space than we can spare here.

Also, we have not covered the whole refinery: there is space here only to mention the units which support the actual treatment plants: the control laboratories, working day and night to check the continuous stream of products at every stage: the utility services providing steam, water, compressed air: the blending and despatch section where (as mentioned already) refinery products are skilfully blended to meet exacting market specifications: the analytical laboratories, testing the extracts, sulphonates, fat-splitting and other chemical products: the research laboratories, developing better refining techniques, new products and new applications: and a hundred details of plant and equipment. In our next article we will deal with the fascinating subject of "chemicals from petroleum"—a new industry of which M.O.R. were the pioneers in Great Britain. We now leave oil refining proper, but, in the meantime we might suggest that readers visit M.O.R. The refinery is glad to welcome organised parties, and readers may then see for themselves in detail the intricate refining operations which have been so briefly outlined here.

(*To be continued*)

Stamp Collecting—(*Continued from page 101*)

also appear on the Victory commemorative stamps issued later in the year in Southern Rhodesia. This set contains four stamps, and one of these, the 3d. value, goes into our collection, as it has a portrait of the Princess as the central feature of its design.

Newfoundland again came into the picture during 1947 by the issue on 21st April of a 4c. light blue stamp with a well framed portrait. With the Australian and Canadian stamps already referred to, this completes the story of the "Princess Elizabeth" collection down to the present. Already there is in it a wealth of colour and interest, and there is no doubt that a collection begun now on these lines will not only grow in extent, but will become increasingly attractive.

OCTOBER 1947 PHOTOGRAPHIC CONTEST RESULT (HOME)

1st Prize, Section A: P. F. Chapman, St. Leonards-on-Sea; Section B: A. Lewis, Roath, Cardiff. 2nd Prize, Section A: J. D. Gorringe, London S.W.7; Section B: C. Hanson, Shipley; 3rd Prize, Section A: R. Wrigley, Clitheroe; Section B: T. Beddoes, Chester. Consolation Prizes: L. Churnside, Newcastle-on-Tyne 6; R. Miller, Northall; E. G. Holley, Heathfield; A. C. Bloomfield, Poynton; N. V. Salt, Newcastle.

Fireside Fun

"Dad, what is speed?"
"Speed is what you put down a red-hot poker with!"

* * * *

"Is your mother in, Jimmy?"
"You needn't ask when you see me doing this."

* * * *

Mother: "Billy, didn't I tell you not to have any more fights with that Jones boy?"
Billy: "This isn't another fight! We didn't finish the one we had last week."

* * * *

"I know a bird that can go years without food."
"What kind of bird?"
"A scarecrow!"

* * * *

"I wish that I had all the money I'd spent on toffee."
"Would you put it in your money box?"
"No, I'd buy more toffee."

* * * *

THIS MONTH'S HOWLER

Matriculation means murdering your mother.

* * * *

"Have you boys seen a lorry load of monkeys pass this way?"
"No. Where did you fall off?"

BRAIN TEASERS

WATCH THE DAILY ROUND

If a watch has a seconds hand, how many times do its hands make a complete revolution in the course of a day?

* * * *

MATCHLESS!

Here is a rather intimidating collection of consonants.

WNVRSMDFRMNWHRVRWWNT

By adding a vowel 14 times in the right places, and spacing out properly, this can be transformed into an intelligible sentence. What vowel is this and how does the sentence read when it is inserted?

* * * *

"Superb! I wish I could take those beautiful colours about with me."
"You will. You're sitting on my palette."

* * * *

TAKE THIS ONE EASILY

Suppose you were locked up in a room with no window or fireplace, and a door made of steel. Inside the room is a piano, a settee and a calendar. How would you eat, drink and finally get out? It is perhaps as well to add that this is not a serious detective problem!

* * * *

SOLUTIONS TO JANUARY PUZZLES

Here are four solutions to our first brain teaser in the January "*M.M.*"

$$\begin{array}{r} 2\quad 6 \\ -+-+4+5+8+79 \\ 1\quad 3 \end{array} \qquad 96+\frac{2148}{537}$$

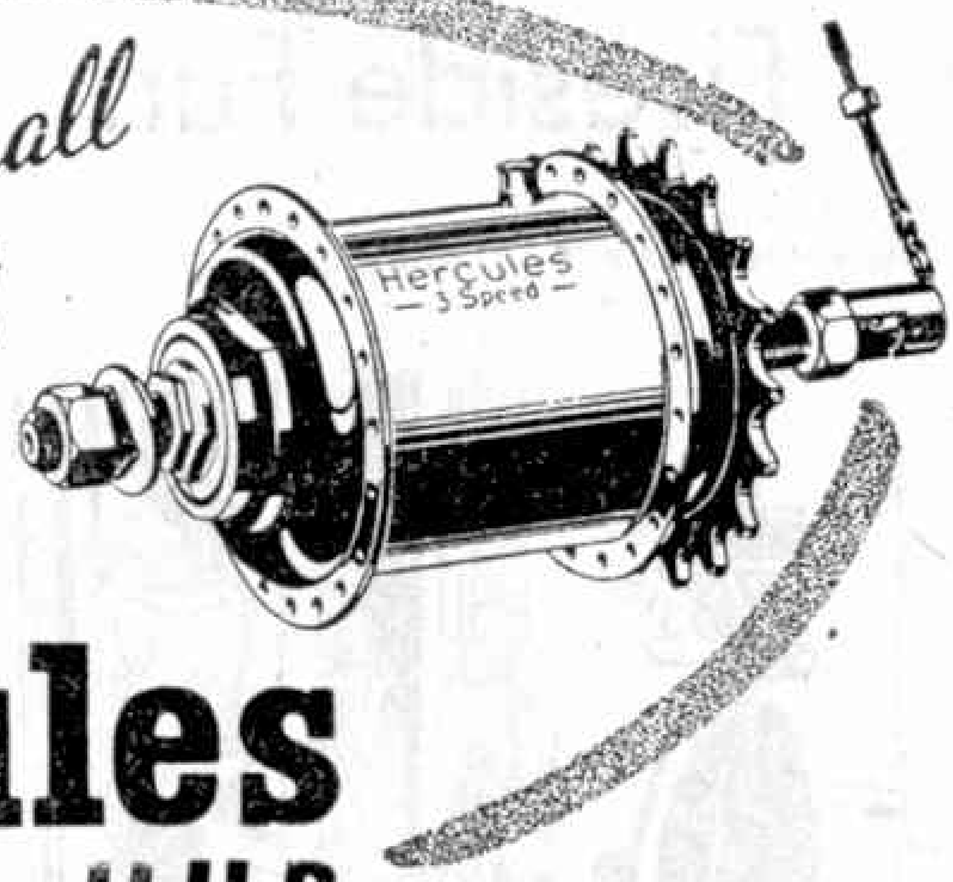
$$94+\frac{1578}{263} \qquad 91+\frac{5823}{647}$$

The numbers in the magic square of our second puzzle are obtained by substituting the figures 1 to 9 for the first nine letters of CUMBERLAND, the letter D representing O.

The Meccano Parts in the third puzzle were FACE PLATE, FORMED SLOTTED STRIP, BOILER or COLLAR, SPRING CLIP, PULLEY WHEEL and AXLE ROD.

The apparently impossible puzzle that came last in January becomes easy when it is realised that matches are used. Two matches placed end to end give the I, and four matches in the form of a cross give the X, of the Roman number IX, made up from six matches. Then a horizontal line drawn through the middle of the IX has above it IV.

You'll lick them all when you fit the new



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3-SPEED HUB

This modern precision-built 3-Speed Hub has already been fitted as original equipment to many thousands of Hercules Cycles and is unexcelled in performance. Now it is available for servicing any make of cycle.
It is an epicyclic 3-Speed Hub, machined to *precision* engineering limits from the finest materials including Chrome Alloy Steel, and subjected to most careful heat-treatment. Ratios 33⅓% Normal to High; 25% Normal to Low. Completely effortless changing.
See your local dealer or write to us for name of nearest Dealer.

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H122G

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FOR AMATEUR PHOTOGRAPHERS

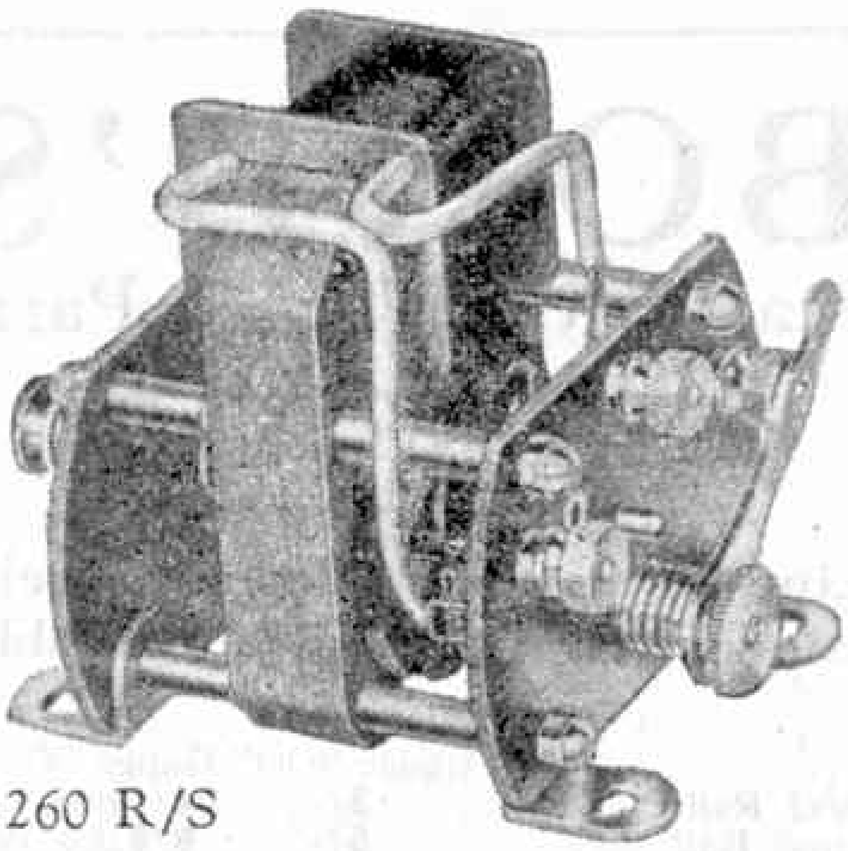
Easy to empty without splashing or dribbling. Embossed ridges raise prints and prevent accumulation of sediment. Light, strong and not liable to get chipped or broken. Hard, black plastic, can be kept clean, bright and free from stains. Impervious to ordinary chemicals.

4¼×3¼	(9×12 cm.)	1⅝-in. deep
4¾×6½	(13×18 cm.)	1⅞-in. deep
6½×8½	(18×24 cm.)	2-in. deep

Send 3d. in stamps and we will post to you a copy of the new 38 page book called Home Photography. We will also enclose an illustrated catalogue of the chemicals we make and which you can obtain from all photographic dealers.

JOHNSONS OF HENDON

PHOTOGRAPHIC CHEMICALS & APPARATUS



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"THE TOFFEE SPECIALISTS"

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- Organised Sport.
- Own Swimming Pool.
- Low Fees.

A few vacancies for admission.

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Dept. M.M.2
WATFORD, HERTS.

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Prussian Infantry of the line ...	1750
French Zouaves	1871
British dismounted Lancers ...	1903
Austrian Mountain troops charging	1918
British Indian Infantry	1944
Russian Infantry	1946

Each box contains 8 figures @ 3/11 per box, plus 8d. packing and postage.

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Scale Model Track Parts

Gauge "00" and "0"

Limited quantities of our well-known track parts are available

	PRICES: Gauge "OO"	Gauge "O"	
Steel Rail	**3/–**	**4/–**	doz. yds.
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Chairs	**2/6**	**2/9**	100
Electric Chairs ..	—	**3/6**	100
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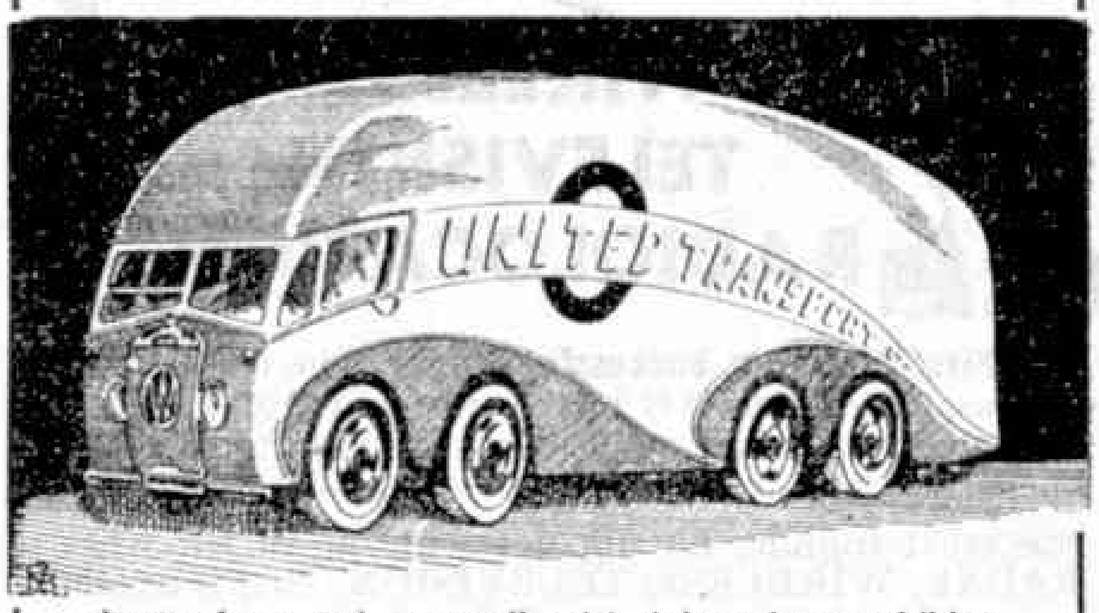

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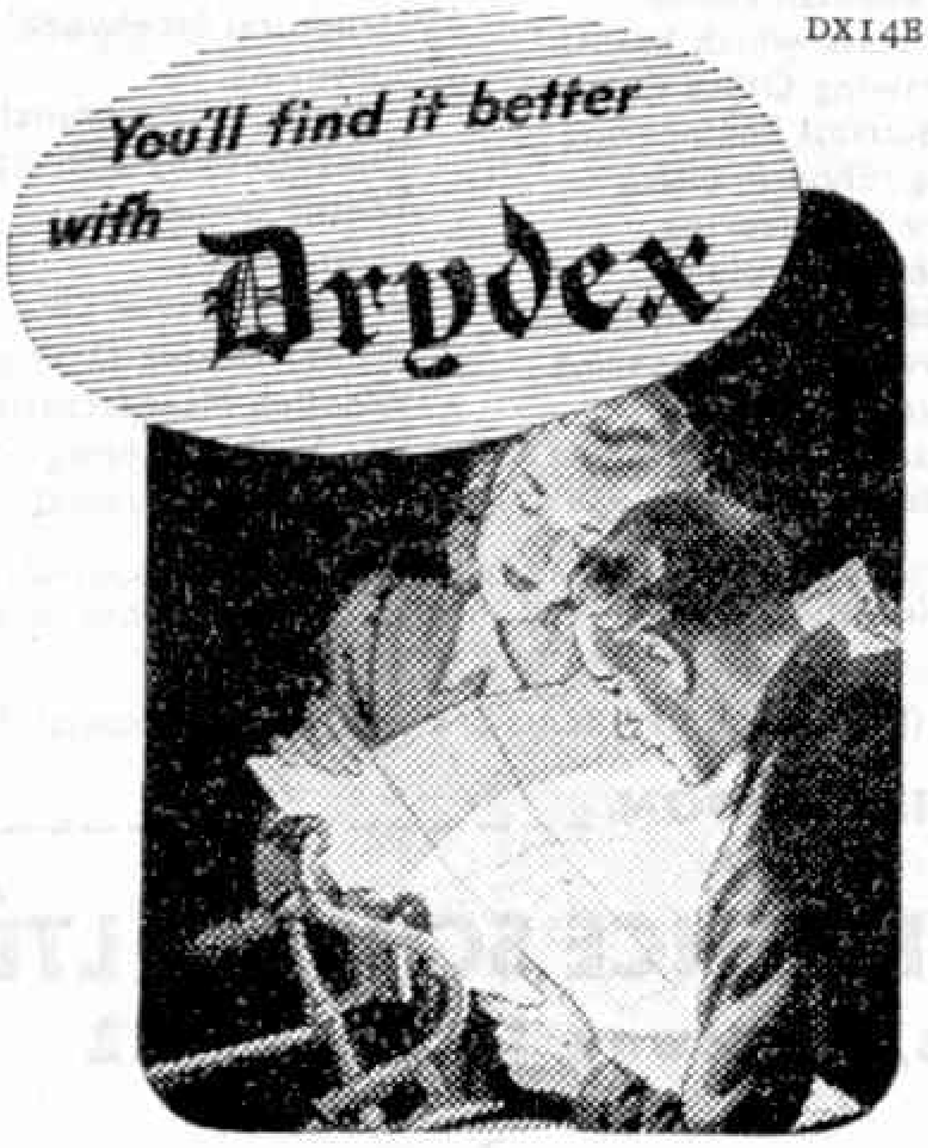

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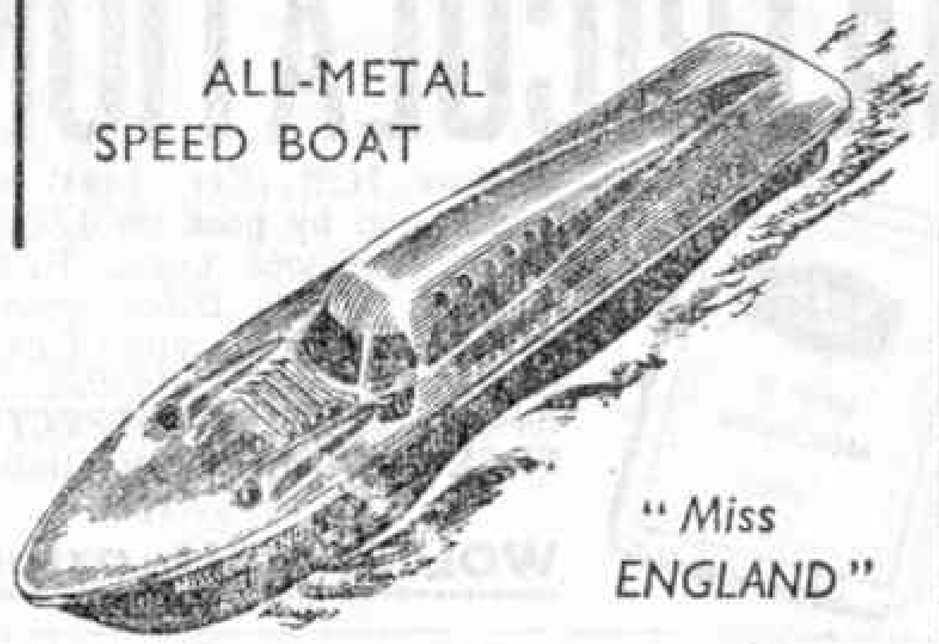

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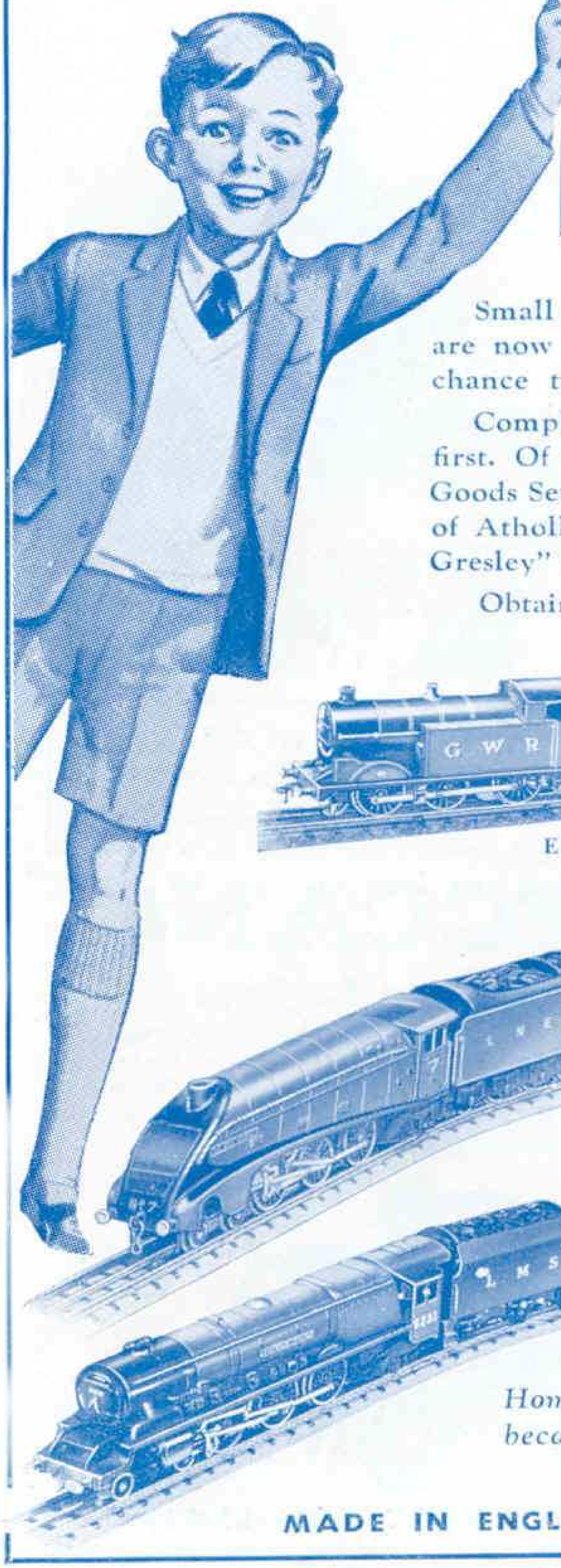

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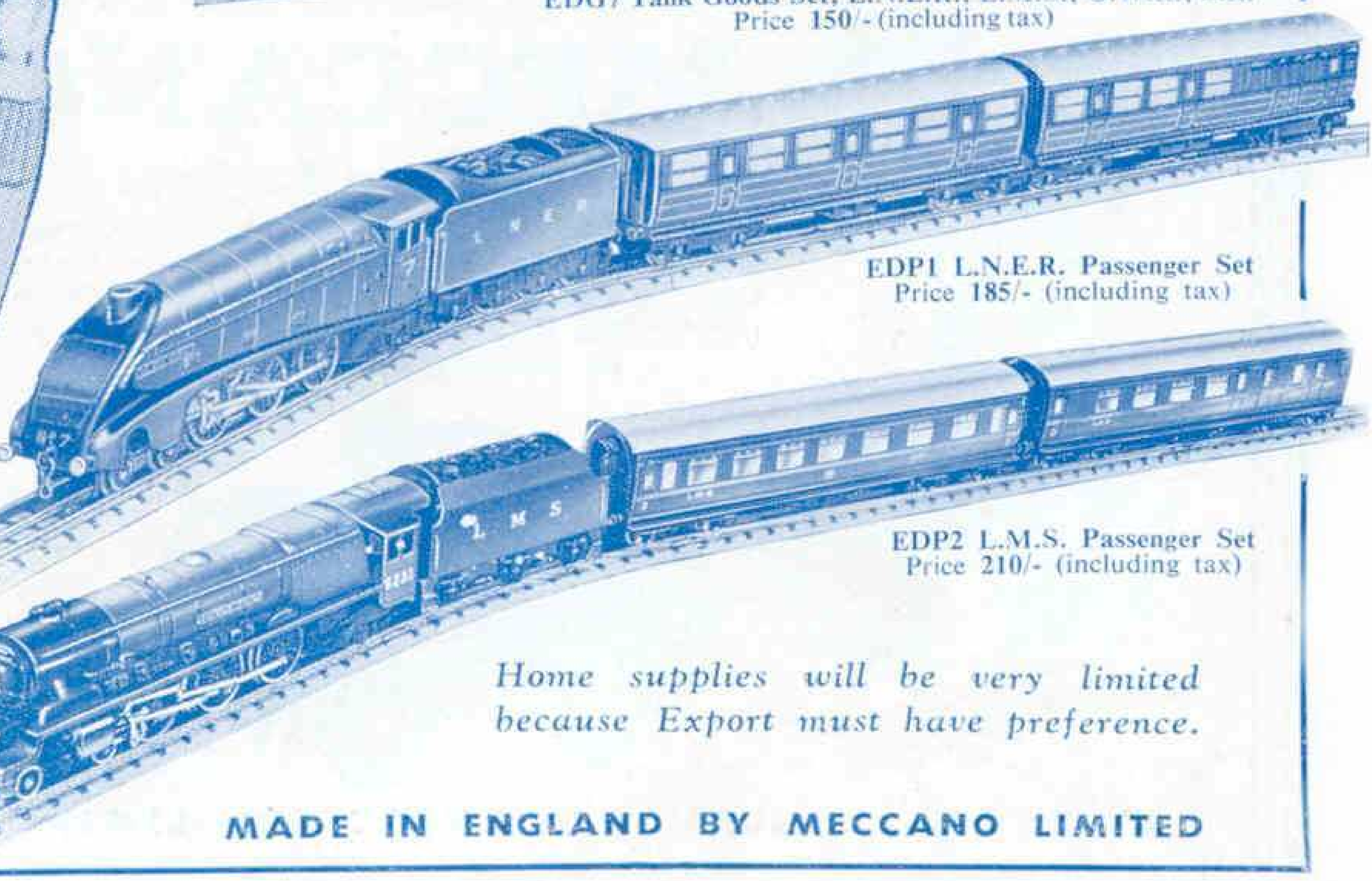

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